DOMESTIC ENGINEERING

Whole No. 997. Vol. LVIII. No. 3. 445-447 Plymouth Ct., Chicago. January 20, 1912

Discussing Conventions

Tim Dugan rumbled rather than walked into the store of Fogarty & Simpson on one of these recent below-zero mornings. He and Fogarty had been helpers together and were now competitors but still good friends and members of the local association.

"Cold, ain't it, Tim?" said Fogarty with genteel disregard of correct English.

"Down below Cairo," says Tim, "and it wud hev been a h—— of a sight colder if I had nailed the thermometer a foot lower. Glory be that I didn't! And pwhat's the fancy program ye're rading? Is it a dance of the Pheemale Bunch of Sheep?"

"Nothing like that," said Fogarty, "it's the program of the state convention that I'm going to attend next week. Are you going along, Tim?"

"Nothing like that in my family," grinned Fogarty. "I only attended wan uv thim and that was enuf for your uncle Tim. All the divvils that iver cut the throat of a profit out uv a job that I figgered on were there and I hadn't the patience to sit annywhere near thim. Robbers and thaves, that's what they are and may the divvle fly away with them!"

Dugan halted for breath and gave Fogarty an opportunity to break in to his impassioned discourse.

"Tim, you're all wrong. When men go to conventions, it's not for the purpose of digging up all the old grievances, real and imaginary, that a man may think he has against his neighbors and competitors. The convention is to be considered as a sort of trysting place of all those who desire to better their business conditions, who realize that even if things are pretty good now something may happen to destroy their commercial peace at any time and who know that in such case there is safety in numbers and in the multitude of counsellors there is wisdom."

"Shure," cried Tim, "and ye talk like Father O'Flynn, wid all yer long-winded wurds. And as to counsellors, God forgive me if I iver had to take counsel with ayther Murdock or Finnegan. Isn't Finnegan selling bath-tubs at six dollars and fourty cents? Bath-tubs, mind you! and Murdock, who took the parish-school with his omadhaun figgering of three dollars and sivinty-foive cents for closet combinashuns. A foine chance I'd have in a convinshun of piryuts, yes, no!" And Tim spat a chew of tobacco right into the heart of a spittoon twenty feet away.

"Do you believe in the square deal for everybody?" asked Fogarty, in a quiet voice.

"You bet yer life," rapped out Tim, "and I believe that ivery man is as good as anny other man and maybe a whole lot betther, wid the exception maybe of Murdock and Finnegan."

"Then," says Fogarty, "You're coming with me to that convention. If you say you're straight and you think I'm straight, the state convention needs us real bad. You know what's the proud boast of the Irish, 'that is the only race that can start a fight without an excuse.' We'll go down there with our fighting clothes and if they are as bad as you think, we'll fight out the best state convention yet held without an excuse, and win the fight.

"Besides, Tim, we should be charitable. Maybe those price-cutting fellows are finding out that it don't pay and want to know how to act properly. Where would our hospitality be if we were not there to tell them and help them out? If things are as good as they say, it's a swell time we'll have and we'll gain more knowledge to help us in our business through the year.

"If things are as bad as you think, it is up to us to clean house. Either way you are with me, Tim, are you not?"

"Will yez lind me the price of a railroad ticket, shud I be broke on the fatal morning?" asked Tim.

"You bet yer," said Fogarty.

How Much Fuel is Required to Heat Buildings?

By J. M. Robb

Who knows?

Is it possible to estimate in advance, with any degree of accuracy, the fuel-consumption of a heating-plant?

To the first question, the answer at present seems to be: "No one, not even the man who pays the fuel bills."

No systematic effort seems ever to have been made to collect data on the actual fuel-consumption of heating-plants for long periods, at least there seems to be no published record of such an effort. Perhaps the time is not yet ripe for it now, but unless a start is made no data of the sort ever will be collected, yet information of this sort is just as important as the statistics of heating-boiler efficiency-tests, and no real measure of the performance of heating-boilers can be formulated without a study of such data.

The second question should be as easy to answer as estimating the food-consumption of any aggregation of people, and such estimates are being constantly worked out and used by those in the hotel and restaurant business.

It is hoped that heating men everywhere will be sufficiently alive to the value of a compilation of actual fuel-consumption data to be willing to assist in its collection, and this effort is made to ascertain if there will be any general support for work of this kind. It is desired that this effort shall be the foundation for a continuous collection of fuel-consumption data, that will be available to every one engaged in the heating business.

If every reader of this article will cut out the blank report that is a part of it, fill out the report completely and mail it to "Domestic Engineering", a good start will be made. If sufficient support is given, additional blanks will be furnished on request, to those who care to assist by giving data for more than one installation.

When scientific study makes it possible to increase the efficiency of a workman in so simple and so old an operation as laying bricks, what wonders would be worked by the same sort of study applied to the question of how much fuel is required to heat buildings!

An extensive compilation of such data would at least indicate the limits within which fuel-saving could be accomplished with the knowledge at present available, and it might serve as a basis for establishing a standard for such work.

The human element in the handling of fuel for heating-plants is of course the factor that most affects results, but ready access to a fund of information as to the fuel-consumption in similar buildings under similar conditions will go far towards equalizing this most uncertain factor.

The question of fuel-consumption should interest every one connected with heating apparatus, and it is so important that it merits a great deal more notice than ever has been paid to it by manufacturers, architects and engineers, or contractors. The best results never will be obtained in the design of heating apparatus until all those interested join in a harmonious co-operative effort, and it is hoped that the time is auspicious for the inauguration of this attempt at co-operation.

In the light of present information, it seems probable that more fuel is wasted from the installation of boilers that are too large, than by using too small boilers. There is many a boiler in service today that would give its owner a greater return for the fuel burned in it, if its grate were much reduced in area. A small quantity of fuel burned with the right proportion of air, will put more heat into the radiators than a large amount of coal burned with too much or too little air. Usually a large boiler is so fired that only a portion of its grate is covered to the proper depth, and the boiler is made a fine air-heater, discharging the heated air up the chimney.

The whole question of boiler-ratings is, first of all, one of chimney capacity, and when one of our greatest engineering schools selects for an efficiency-test on a 60-ft. chimney a boiler that was designed to operate on a 30-ft. chimney, the general lack of knowledge on the subject of chimney-capacities is apparent. The boiler manufacturers themselves have never appreciated the important relation that proper chimney-capacity has to efficient fuel-consumption. If they had, their catalogs would state very clearly the capacity of chimney required for the best results with their boilers. Every attempt to rate boilers on any sort of a rational basis will be a failure, as long as the chimney-capacity receives no more attention than it does at the present time.

A careful study of the actual fuel-consumption of a large number of heating-plants would throw much light on this phase of the question of rating boilers, as well as many others that are not clearly understood now. Efficiency tests on heating-boilers are very necessary, but they, alone, are not a sufficient guide for the best results in boiler design.

While considering the question of boiler ratings, it may be noted that best thought on this subject seems to be that the only rational way of expressing a boiler's rating is to state the number of pounds of steam it will produce in a given time, on a given chimney, with a given amount of a given fuel, and for a given time, without attention. A square foot of radiation under different conditions requires different amounts of steam, and it would seem as though some of the larger manufacturers of heating-boilers would recognize this, and, with the courage of honest convictions, state in their catalogs just what their boilers will do, and the chimneys best suited for their boilers to carry the loads with the highest efficiency. Perhaps this is too much to expect of the average manufacturer, however, for the success of his business, unfortunately, depends on other things in addition to building the best boiler he knows how to build, and stating honestly what he knows the boiler will do.

Efficiency tests alone are not a safe guide for any manufacturer. There is an electric-motor built that on efficiency tests alone excells all others. In actual operation, however, the care required to keep the motor up to its best prevents the users from realizing the economy indicated by the efficiency tests, and other motors, showing lower efficiencies in tests, produce lower operating-costs in the way of electric-current bills. Boiler manufacturers must not lose sight of this condition.

There is a tendency towards boilers of the flash type in heating-boiler design, that may result in trouble for the designers, where soft coal is used for fuel. With anthracite, this type of boiler probably will give excellent results, but soft coal presents a different problem, and the great extent of the territory where soft coal must be used for fuel merits the design of a boiler exclusively for this kind of fuel.

In mechanics, an ample weight in a balance or flywheel is found to be of the greatest importance where

energy is applied to a machine at an uneven rate, or where the load on the machine is subject to great fluctuation. The heating boiler for soft coal fuel presents a parallel problem, and boiler designers will find that the balance-wheel stage of the soft coal boiler deserves more attention than they have yet given it.

A fool-proof boiler that will do its work under gross abuse, is of more importance than one showing the highest possible efficiency test.

The effort behind this article is a disinterested attempt to get together a large volume of facts on the question of fuel used in heating-plants under continuous operating conditions, as it is believed that sooner or later a digest of these facts must be made. If they can be gathered by co-operative effort, their value will be greater to the men in the heating business than it would be otherwise.

The question is put up to the readers of "Domestic Engineering".

"Domestic Engineering" Inquiry. Fuel Required to Heat Buildings

1. Building used for:
2. Location:
3. Fuel used:
4. Tons used from To
5. How is building heated?
6. How is it ventilated?
7. How many feet of radiation?
8. Size of chimney: 9. Height: Ft. 10. Kind:
11. Kind of boiler:
12. Length of grate: 13. Width: 14. Area:
15. Length of building: 16. Width: 17. Height:
18. No. stories: 19. Cu. contents:
20. Exposed on how many sides?
21. No. Sq. Ft. Glass:
22. Construction:
23. Remarks:

Signed

There must be individuals here and there throughout the country who have items of information along this line. Such are asked to consider the great value of an extensive fund of similar information, and are asked to forward what they have, for addition to the general fund.

The entire heating world owes a debt of tremendous size to our largest manufacturers of boilers and radiators, for their great expenditure of time, money and effort in research-work to develop their product to the highest efficiency. The debt isn't lessened because the expenditure has been made with the idea of developing business. Every effort that has helped mankind has had something of the same kind of incentive behind it, and every attempt to give increased service, even though the primary object is to build business, is entitled not only to a profit, but to a more general appreciation of the effort from the public, than has heretofore been expressed.

An inquiry such as this is too big for any one organization. It is a matter in which every one, manufacturer, engineer, architect, contractor, owner, has a mutual interest, and it would seem that it affords an opportunity for all to join hands in a harmonious effort to pull together for the mutual profit of every one concerned.

This is a great country, and there is room for everybody in it. It is impossible for the biggest manufacturer of heating apparatus to supply the whole market. It is also worth while to consider that every defective heating plant is a direct injury to every man in the heating business, as well as a loss to the people directly concerned. Further, anything that adds to the knowledge of what constitutes good heating results, is a direct profit to every man in the heating business.

It is hoped that a full consideration of the possible results from this inquiry will induce the great manufacturers of heating apparatus to lend the assistance of their organizations in a general boost.

Explanation of the Attached Inquiry Blank.

1. Building used for; state store, residence, church, hospital, school, etc., as the case may be.

2. Location; state town and state.

3. Fuel used; state anthracite, coke, soft coal, gas, etc., as the came may be, and if possible where the coal was mined.

4. State the number of tons, or quantity used in a full heating season, and give the dates covered by the heating season, as from October 1, 1911, to June 1, 1912. Data is wanted for the full heating season.

5. How is building heated? State atmospheric system,

Broomell system, gravity hot-water, Honeywell hot-water, hot-air, low-pressure steam, Moline system, stoves, etc., as the case may be.

6. How is it ventilated? State no provision made, grates, complete ventilating system with fans, etc., as the case may be.

7. How many feet of radiation? State 1,000 sq. ft. direct, or indirect, including, or not including mains, as the case may be.

8. State inside size of cross-section of chimney as 12x12, 16-in. round, etc., as the case may be.

9. Height. State height of chimney above top of boiler.

10. Kind. State brick; brick, tile-lined; concrete, steel, etc., as the case may be.

11. State sectional, cast-iron, round, firebox, etc., as the case may be.

12. State length of grate.

13. State width of grate.

14. State diameter of grate if it is a round grate, and give the grate area in sq. ft., whether it be square or round.

15. State inside length of building.

16. State inside width of building.

17. State inside height of building.

18. State number of stories to building.

19. State cubic contents of building heated.

20. State whether one, two, three, or all sides of building are exposed to the prevailing winds.

21. State number of square feet of glass, calling the entire area of all outside door, window and skylight openings glass.

22. Construction; state, brick, frame, stucco, concrete block, re-enforced concrete, etc., as case may be.

23. Remarks; state briefly anything that affects the fuel consumption in an unusual manner, as, "Heated two days only per week." "Mains uncovered." "Building very much exposed to long sweeps of prevailing winds." "Very careful janitor," etc.

The matter is now up to the readers of "Domestic Engineering."

It will be interesting to note whether the agitation about boiler-ratings and similar matters has prepared those directly concerned to give a little of their time in an effort to arrive at the only measure that really expresses the performance of a heating plant: How much fuel does it require to heat the building where it is installed?"

INTERESTING VENTILATING EXPERIMENTS.

Dr. Leonard Hill, who has just completed a series of remarkable experiments at the London hospital, contends that still air in hot rooms cannot be kept pure, no matter what the system of ventilation is.

Dr. Hill is a lecturer on physiology at the London hospital and for some time he has devoted himself to the study of the effect of subterranean work on human beings. His work emphasized the danger of bringing divers out of the water too quickly and his suggestions have done much to make their calling less hazardous.

As the result of his most recent experiments Dr. Hill contends that ventilation is not a question of the chemical purity of the air, but that the evils of illy ventilated rooms arise almost entirely from their excessive heat and humidity or their excessive dryness and to a certain extent from the offensive smell.

The ideal temperature for a room in which a number of people are gathered is from 57 to 60 deg. he says. According to the rules of the home office only one to two parts per thousand of carbonic acid should be allowed in a room, but Dr. Hill states that 20 to 30 parts per thousand will do no harm if the air is kept cool.

The experiments took place in a chamber 8 feet high and 4½ feet square. In this small space Dr. Hill crammed eight healthy medical students and sealed them in. They remained there half an hour until the chamber contained 4 to 5 per cent of carbonic acid and 15 per cent of oxygen. The temperature rose to 85 deg. and as the air became saturated with moisture the students became intensely hot and uncomfortable. When they were examined their pulse showed an acceleration beyond what would be normally experienced in a cool place. The doctor then set a number of electric fans in the top of the chamber in motion. The students in a short time were able to endure the heat and even to work in comparative comfort in spit of the close confinement and the high percentage of carbonic acid in the air. This was because the air at 85 deg. was cooler than the bodies of the subjects, and while in brisk motion it was sufficient to make them quite comfortable.

Dr. Hill in his lecture on the result of the experiments declared that the age of heating houses and trains in winter was coddling the race and tending to break down the natural defensive mechanism of the body, rendering it thereby more liable to illness. He said: "Cold air makes us more active to warm ourselves, makes us do more breathing and gives us a better appetite. The system is toned up and we take in more food and oxygen. Hot, dry air dries up the throat and makes people prone to infective disease."

A PLUMBER'S BULLDOG APPRECIATES MODERN CONVENIENCES.

Plumber Brown in Minneapolis is the owner of a good husky white bull-dog, and we have the word of Brown's bosom friend for the statement that the dog knows a darn sight more than Brown, which statement we shall endeavor to trace to its conclusion. A few days ago the Brown family had roast-beef for dinner and Togo, the bull-dog, by the way, had the pleasure of cleaning up the leavings, from which performance he derived much pleasure and Mrs. Brown a very greasy floor. That evening Friend Brown noticed that the toilet in his bath-room did not work with its accustomed vigor, so he called into service his trusty plumbers' friend, but this, too, went down to defeat, following which he tried one of Mr. Wrigley's augurs, but this product of an inventive plumber likewise failed to make good, following which Friend Brown disconnected the bowl and found a good, husky piece of bone lodged in the bowl, so the bone was removed, thrown on the floor and the closet connected again. Brown left the room for a few moments and noticed that Togo had secured possession of the bone again and was grinding his teeth on its smooth surfaces with evident enjoyment. Coming back a few moments later, Brown was surprised to see Togo headed for the bath-room, the bone in his mouth, and to cap the climax Togo walked over to the closet, raised his head up over the bowl and dropped the bone into it and then retired to his rug with a look of calm content on his face, evidently feeling that he had done his duty like a man. Brown's friend still insists that the dog has it on Brown.

His New Password.

"I want to change my password," said the man who had for two years rented a safety-deposit box.

"Very well," replied the man in charge. "What is the old one?"

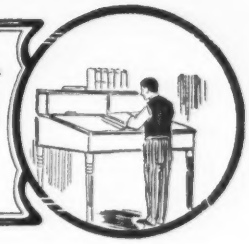
"Gladys."

"And what do you wish the new one to be?"

"Mabel. Gladys has gone to Reno."—Judge.

BUSINESS MANAGEMENT

NEW METHODS FOR OLD



MISTAKES MADE BY PLUMBERS. WHAT THEY COST YOU.*

By Geo. W. Ryan, Secretary and Manager of the Standard Mfg. Co., Pittsburgh, Pa.

Are you honest?

I am asking a pointed question of the plumber for a purpose.

Honesty is a positive quality, a good quality, a trait we all think we possess, and very often it is only after a very careful analysis that we discover that we are dishonest in one direction or another.

But have you ever made this analysis? Usually it shows that a man is simply dishonest with himself.

He conducts his business in a straightforward way, does good, conscientious work, pays his plumbers the customary wages, treats them well, allows his customers all the time they want to pay him, pays his bills with his supply houses, etc., but still he is dishonest with himself.

Now that the year is drawing to a close I am going to ask every plumber who reads this article to make a close analysis of his business and of himself, also.

If you run over into next year with the same old habits, the same old equipment, the same old ideas, the same old establishment, the same old friends and in the same old rut, then you are going to have the same old unsatisfactory results.

You will have to take the time, however, to do this properly, and you will have to coax yourself into the proper humor to scold yourself, to pick flaws with yourself and to act on any wise thoughts which come to you as a result.

Now, here is my suggestion. Be brave all through it, and see next year how it pays.

Suggestion No. 1:

I am —— years old, and what have I accomplished in this old world? Am I even comfortably fixed? When I was a boy didn't I look forward to the time when I would be my own boss, and didn't I have plans as to how I would make my mark in the world? Instead of succeeding, what am I?

Now, reason with yourself for awhile, and I know you will find that you are a disappointment to yourself.

Suggestion No. 2:

I have worked hard, long hours, severe strain, lots of worry. Why, then, didn't I make good? Should I have looked after the big ends of my business alone, those ends which produce, and left the petty affairs to be handled by some one I can trust and pay for his service?

Now, reason this out, and see what you think of yourself.

Suggestion No. 3:

My health. Can I take those "cross country runs" for miles as I used to, can I stand what I used to, do I ever peel off as I did when a boy and take a good swim, or hunt, or box? Do I pant and feel exhausted when I run half a square for a street car? And do I have any real, genuine fun? I am getting old. Am I becoming a "drudge"?

Now, reason all this out, and tell yourself what kind or how many kinds of a dunce you are for allowing this condition to exist.

Suggestion No. 4:

Am I happy and contented? Can I forget at night the problems of the day's business, and show my family a good time? My children—do I know their little friends? Do I ever join in their games, and get real pleasure from them, forgetting everything else except to make them happy? If not, then I am growing old.

Now reason whether this shall continue next year, or whether you are man enough to make a change for the better **now**.

Suggestion No. 5:

My mother, my father, when did I see them last? Isn't it a fact that they would be overjoyed if I would visit them or write them tonight? Do they know that where once they had a bright, promising boy, they now have a grouchy, careworn, business-worried, broken-down man to worry over?

Now, men, this is the human side of it. Will you let it continue, or change it at once?

Suggestion No. 6:

Am I selfishly extravagant with myself, and niggardly, stingy with my wife? Of course, her last year's dress looks all right for another season, and last winter's hat can be trimmed over again, but didn't I get a couple of new suits this year, three new hats and a new overcoat, and don't I have a good time with the fellows? Does my wife complain? Not she, never a murmur—and so I think she is satisfied and couldn't be any happier.

Now, men, this is the heart side of it. Go right in and cheer her up, show her that she has a man who promised to make her life happy and pleasant, buy her some new things in keeping with your financial ability. But don't cheat with her. See how much better you feel.

Suggestion No. 7:

Have I forgotten that there is a future, and that I have a soul? Have I been so careless on this subject that my wife and children have the religion for the whole family? Do I live up to the teachings of that good old mother?

Now, a general brushing up on this one point will produce results.

Suggestion No. 8:

What kind of a shop have I? Is it a pleasant place for my customers to visit, or is it so crammed with old stock, old tools and junk, that if a lady ventured in she would stand all the while holding her skirts back, or afraid to sit in the dingy old chair I offer her?

Now, here is a chance for some good housecleaning. Try it on; it will work.

Suggestion No 9:

Have I a show window? What does it show? Does it reflect my own character? Is it well arranged, clean, sparkling, attractive, or is it dirty, unkept, filled with dust-laden brass work and mantels, instead of showing the real things in all their glory, on which I hope to make my money?

Now, New Year's resolutions are in place right at this

*Reproduced by courtesy of "Modern Sanitation."

point. Fix up, brighten up, rearrange or remodel your show window or show room.

Suggestion No. 10:

Do I go after the best class of trade, or am I content to retrogress into the tinker or shoestring class? Have I cultivated the acquaintance and friendship of the "best people" of my town, or am I content to associate with the rough, lower element? Do I aim to place my business on a high plane?

Now is a good time to go over your customers and friends and see if they are or are not of the helpful kind. If not, eliminate.

Suggestion No. 11:

As I look over my book accounts on my ledger, are they good for full value, or are they questionable? Do I have a really good system for keeping my accounts, or do I simply scribble a hurried memorandum in a "good enough" way? Do I go out after my money and get it, or am I afraid that if I ask a man for a check I won't get any more business from him?

Now, here's a good place to remember that "short settlements make long friends."

Suggestion No. 12:

Do I owe every jobber in the country an overdue account, and do I proceed to kick and try to find some overcharges as an excuse for further delaying payments, when some jobber kindly asks for money, rightfully due him?

Now, if you do, quit this practice. It is not business. Pay your bills promptly and you will outgrow any tendency to procrastinate.

Suggestion No. 13:

Am I afraid to come out of my cave and tackle something worth while? Do I feel that I haven't the time to spare from petty jobs to tackle one which will be the making of me? I haven't much capital; I might fall down.

Now is the time to show whether or not you have any ability as a financier. The jobber and owner will each lend a helping hand if the job has in it a profit for you.

Suggestion No. 14:

Am I such a fool that in order to keep Sam Jones (my competitor) from getting a job I take it at 5 to 10 per cent above my actual billing cost for material and payrolls? Didn't I actually lose money as a result, and isn't this why I don't get ahead, and am unable to pay my bills, and support my family properly?

Now is a good time to cut out all this bosh. It doesn't get you anywhere. Learn to have enough backbone to charge an honest profit, give an honest job and stick to the price when the settlement day arrives; don't throw off an amount which eats up the profits simply to get your money.

These fourteen suggestions are plenty to illustrate what I have in mind, namely, your mistakes may be in not living right, not mixing in proper proportions the three necessary ingredients to success—work, recreation, rest—and you make a mistake if you neglect any one of these three points. Or, again, your mistake may be in neglecting or overlooking some important feature in your business life which will lead to success or failure, and my hope, therefore, is that you will take time enough to apply this analysis of yourself to yourself, not only once now, but frequently.

If you are perfectly satisfied that you have no shortcomings which can be helped by this heart-to-heart talk with yourself, then let me get acquainted with you at once, as you can be of untold value to your associates, and your example will be followed and safely patterned after. Try it.

SCIENTIFIC MANAGEMENT AS APPLIED TO THE HEATING INDUSTRY.

Chas. S. Kellum, M. E.

The Importance of Good Tools.

Now as to tools, the writer differs with the old saying, "A poor workman blames his tools." Poor tools are blamed, and rightly so, by good workmen. It is false economy to use cutters, wrenches, dies, etc., that are badly worn, for the slip and lost motion attendant upon the use of worn tools more than counterbalances the expense of new ones. It is well to keep a record of the life of tools as used by each workman, for if a workman spoils more than a fair percentage of the tools he is using, you can make up your mind that his operations are somewhat at fault.

The custom of making workmen supply their own tools cannot be too strongly recommended, for few workmen care to buy a new tool until the old one is absolutely out of commission.

Although on almost every job, whether large or small, it is the custom to place the work-benches in one spot and keep them there until completion of the work, the custom is at fault. Work-benches should be moved each day by the laborers to keep abreast of the work, for it requires far less expenditure of effort to move a bench once a day than it does to move pipe, coils, etc., many times and an increasing distance each day. Benches of the pipe-stand variety are to be recommended for lightness coupled with rigidity and stability.

Where possible pipe should be cut and coils made up in the shop instead of on the job, for the conditions under which the work is done are more uniform in the shop than on the job. Many contractors who do large work are resorting to portable pipe-cutting machines driven by gasoline engines or electric motors where current is available. I know one contractor who rigged up a cutting machine, pipe rack and fitting bins on a very large job. This method, while unusual, seemed to have some advantages for this particular contractor, as his shop was about 50 miles from the job under construction.

The writer had the pleasure of seeing a coil-job handled almost entirely from the shop the other day, and was much impressed with the way the work was carried on. The mains and branches were cut up to a certain point from a drawing containing dimensions of the building. The coilers and risers were then cut and assembled and the whole arrived at the job in the same ratio of time as the work of assembling on the job was progressing. This made the assembling on the job much quicker and required considerably less men to execute. The coils, mains, etc., were never in the way, inasmuch as they were delivered as wanted on the job.

Favorable Conditions Are a Great Aid.

In making an analysis of the conditions under which the men do the work, we must include other quantities, such as:

1. The weight and quality of materials used.
2. The surroundings in which the work is done.
3. The clothes the men wear.
4. The temperature, light and ventilation in which they work.

In the first instance, it is obvious that the weight of the materials used is a prime condition. Men experienced

*Reproduced by courtesy of "Radiation." Copyrighted by United States Radiator Corporation.

on light work, such as dwellings, small factories, etc., will find heavy work a much different and almost foreign proposition. Power-plant work and heating work while being governed by the same theories are as much different as day and night. It is seldom that men experienced in one line are successful in the other, for the handling of heavy material is a craft in itself.

The condition of the materials affects both the progress and quality of the work to such an extent that we need only to talk with the men who have received a "bad batch of stuff" to inform ourselves how materials influence not only the work at hand but the temperament of the men doing the work. Cheap materials, like cheap tools, are expensive and do not tend to add great luster to the name and reputation of the contractor installing them. If a system of inspection such as is in vogue on plumbing work were applied to heating, the business would reach a higher plane and honest, reliable firms would not have to drop their standards to meet the competition of incompetents.

The surroundings on the various jobs are usually such a variable factor that they cannot well be controlled, even though they are one of the most important factors in affecting the temperament of the men.

The clothes which men wear play an important part, for they should be varied in direct ratio to the temperature in which the work is done. Men can only be advised as to the best clothing to wear, for this is an element beyond our control. Loose clothing is at all times preferable, for tight clothing is not alone uncomfortable but many foot pounds of energy are expended in a day by an active man in overcoming even the slight resistance to movement offered by tight clothing.

Inasmuch as the work at hand is being done to produce ultimately a certain standard of temperature and ventilation, we must not lose sight of the fact that these two important elements affect our workmen to a large degree. Windows should be left open during the working hours in all weather, for men doing such arduous work as is called for in this business require a large amount of fresh air. In very cold weather it is a good plan to temper the air a bit with salmanders burning coke. In any event when the weather is cold there should be some place where the men can warm up a bit at regular intervals. Hot coffee serves to stimulate workmen on a cold day, and also makes them feel that the management appreciates the conditions under which they are working. In hot weather cold water to which oatmeal has been added should replace the coffee. On a large job boys should distribute these beverages to the workmen at regular intervals, so that the workmen will not lose time in going for a drink. Building contractors now universally employ boys to distribute water to the men, and it is a common thing to hear the men calling "Water boy" on any construction job.

Mr. Fennel—You have no idea, old man, how much fun you and the children can get out of a Christmas tree. You ought to have had one.

Mr. Mullen—Oh, yes, I do, I had one. I got fun out of it. I lit it up Christmas night. The children had fun with it, the neighbors had fun with it, the fire department had fun with it, the insurance companies had fun with it. Oh, you are right, old boy, there's lots of fun in a Christmas tree

The Rome Supply Co. of Rome, Ga., has just completed installing a Moline system in the new buildings at Shorter College; 20,000 feet of radiation was installed in five buildings heated from one central plant.

THE MASTER PLUMBERS' PREDICAMENT.

By E. R. W.

Written expressly for "Domestic Engineering."

II.

It is apparent that our money is paid to combinations, both for our material and labor, and the writer thinks a closer business association must ultimately be brought about among the survivors, or in case these conditions continue for a few years longer, the successors of the present generation of master plumbers.

We of the present day are tired of the profitless grind but seem, for various reasons, to drift apart, making it easy for the wise combines all around us to gather the fruits of our toil. Where else on earth will so intelligent a body of men be found who will work 15 hours a day, be bossed by their men and dictated to by their jobbers, and fuss around with and furnish capital for subcontracts from nobodies who hang out a sign "General Contractor," continuing to do the same year after year, for a modest living?

It is doubtful whether our equals in patience and helpfulness to others can be found, as we carry it to what persons not so vitally interested as ourselves, knowing the facts, would consider a joke, except that no one can be found to believe that the men that give bonds and get licenses to set the trust fixtures, dance to every one's music and have no tune of their own to play.

No, it is not believed generally that any one in our line does not make "oodles of money," more especially the ones who are held responsible for the work, and this is a natural surmise, as such self-sacrifice is, outside our ranks, unknown; even missionaries do not stand for bossing from every direction and accept poverty for their pay.

The writer is acquainted with conditions in the principal cities of this country, and it is plainly to be seen that a stand of some kind must be made or in a short time the master plumber will be only a foreman on the work. Whether this will be a beneficial change or not depends largely on our pride and self-respect, as now we don't get more than foremen's wages as a rule. Is it time to call a halt, or shall we keep on and continue to line up with the many branch shops of manufacturers and jobbers and the more than several departments of general contractors and lazily leave the unmasking of these bluffs to the everybody-nobody of some other day?

Some time we must change our gait, as our beneficiaries need more and more money, and we are getting old and can't buy fast enough of the trust's wares, even at their higher city prices, to allow the manufacturer and jobber the common or automobile necessaries of life, let alone their summer and winter resort luxuries.

The progress of "our" manufacturers and jobbers compares fairly well with other lines of trade, as they are all more or less wealthy after a few years of work, and we rejoice that is so; a competence and no less is a man's due for hard work in this great and prosperous country. Unless we get a manager or guardian or saving clause from some direction pretty soon we may as well vote for old-age pensions and depend on them for sustenance during our later years. There may be other remedies and easier ones known to some of our craft. If so, let us hear them, but do not be discouraged; keep suggesting and trying, bearing in mind that something must be done.

Surrounded as we are, with consolidations and combines of all kinds, the natural feeling is for one for ourselves. As soon as we get enough of holding the bag for the others let us in some way assert ourselves and show that we are men among men and that we must be respected by the people we support and the public generally, even if we have to invoke the help of some of the people we pay our money to in order to accomplish our purpose.

Concerning Radiator Efficiency: Some Doubtful Points and a Suggestion

By R. J. P. in "Domestic Engineering," London, England

Those who had the pleasure of listening to the course of the lectures by A. H. Barker, B. Sc., at University College, could not resist the feeling that there are a great many things which are taken for granted in heating practice which are open to serious question when considered more closely. To the heating and ventilating engineer who takes his business seriously, this is upsetting, to say the least of it, for to have our co-efficients called into question is almost as bad as for the fanatic to suddenly conceive a doubt as to the truth of his dogmas.

It is quite evident that as the educational authorities extend to the subject of heating and ventilating that degree of attention which its great importance merits and as there grows up an ever-increasing number of earnest students devoting themselves to research work, the accepted data and formulæ which now do duty will be subjected to acute analysis and will, most probably, be greatly modified.

The grave need there is for some such work of clarification is strikingly shown by the result, just published, of an investigation carried out by the National District Heating Association of America, with a view to learning the various methods in use by central-station engineers for figuring both steam and hot-water radiation. The result of the investigation is both curious and disquieting. In commenting on the many different formulæ received, the chairman of the investigating committee remarks that the "methods of arriving at the necessary amount of radiation required to heat a building and maintain a certain temperature with a certain outside temperature and weather conditions fluctuating seems to be many and of different varieties, as he failed to find any two heating engineers or any two operating companies who use the same formula in arriving at a conclusion. No less than 10 different formulæ were presented and the crucial test came when these were each applied to the same problem. For this purpose a typical building requiring approximately 400 sq. ft. of radiation for steam or 700 sq. ft. for hot water was taken and it was found that the calculations by the various formulæ gave results varying as much as 219 sq. ft. for steam and 120 sq. ft. for hot water, each estimate, of course, being made for the same outside temperature and weather conditions."

So much for the general need for revision. My special purpose in this paper is to deal with the question of

Radiator Efficiency.

In dealing with radiator co-efficients, the writer believes that there are no tables so generally reliable and accepted for practical use as those built upon a number of exhaustive experiments by the National Radiator Co., Ltd. These tables are quoted for comparison.

Approximate Radiator Co-Efficients

Radiator co-efficient is the number of B. t. u. transmitted per hour per sq. foot of surface per deg. difference Fahr. between the temperature of the water or steam in the radiator and that of the surrounding air.

Pattern	Water.	Steam.
1 Col.	1.65	1.9
2 Col.	1.55	1.8
3 Col.	1.45	1.7
4 Col.	1.35	1.6
Window	1.45	1.7

It is impossible to quote the many variations which will be found in other catalogues which are extensively used; the following will be sufficient to illustrate the point under consideration:

Transmission Table (Radiation).

B. t. u. per sq. ft. per hour

Ideal Radiators.	Temperature Difference (Fahrenheit.)					
	Water.				Steam.	
	150–60	160–60	170–60	180–60	215–60	220–60
1 Column ..	150	165	182	198	294	304
2 „ ..	140	155	171	186	279	288
3 „ ...	131	145	160	174	263	272
4 „ ...	121	135	148	162	248	256
13 in. Window ...	131	145	160	174	263	272

Amount of heat in B. t. u.'s given off per sq. ft. per hour by various types of radiating surfaces.

	Hot Water.				Steam.			
Temperature diff.* °F	102·5	105	107·5	110	170	175	180	185
Wrot. Iron Piping—								
Single pipes up to 1¼-in. diam. ...	240	250	260	270	455	470	485	500
1½-in. to 4-in. ...	210	220	230	240	420	435	450	465
Coils—								
Two Rows ...	137	140	143	146	316	326	336	346
Four Rows ..	127	130	133	136	280	290	300	310
Cast Iron—								
Radiators up to 6 sections ..	138	141	144	147	300	308	316	324
Over 6 sections ...	136	139	142	145	280	290	300	310
Single Pipe ...	180	185	190	195	—	—	—	—
Three rows do. ...	136	139	142	145	—	—	—	—

**Temperature difference = Difference in degrees Fahrenheit between the temperature of the hot water or steam and the temperature of the room to be heated.*

The first of these tables shows that the radiator co-efficient has to be reduced by .10 for each additional column added to the radiator, or, in other words, whereas with a temperature difference of 100 deg. F. a single column radiator will transmit 165 B. t. u. per sq. ft., a 4-col. radiator will transmit only 135 B. t. u. per sq. ft. per hour, a loss of efficiency amounting to 21.21 per cent.

Rather a serious discrepancy will be noticed in looking at the third table. Here radiators up to six sections there the word section is obviously used in the same sense as column in the previous table) are lumped together and the co-efficient is given as practically the same for 1, 2, 3, 4, 5 and 6-column radiators, whereas in the earlier and more detailed table of the National Radiator Co., Ltd., the difference in efficiency between a one and a six-column radiator will be upwards of 30 per cent. Surely this is a serious matter to the large number of engineers who use the latter table when ordering from the firm publishing it.

A New Point.

But the purpose of this article is to carry the policy of "beneficent doubt" still further and query whether any of the co-efficients in common use as a basis of radiator transmission are based upon calculations in which sufficient allowance has been made for "exchange radiation" due to the large amount of "blind surface" in radiators of two or more than two columns. "Blind surface" may be defined as any part of a radiator so placed that all its radiations are intercepted by other portions of the radiator, and "exchange radiation" is that portion of the radi-

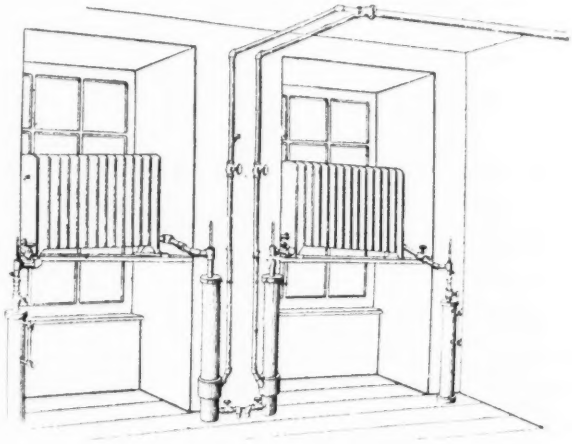
ator which by being so intercepted performs no useful purpose in heating the room but merely maintains the heat of the radiator.

A mere cursory glance at a four-column radiator will show that more than one half of its heating surface is "blind" in this sense, and the result is that the two inner columns will be found to be considerably hotter than the outer columns. In this connection the writer may say that a number of interesting experiments are in the making and he hopes to publish the results at a later date.

It will be noticed that the question of the efficiency of radiators as convectors has not been touched upon. The medical faculty is inclined more and more to emphasize the health value of radiated rather than convected heat, and it is a question of great interest whether the radiation efficiency of a radiator cannot be increased by reflectors. This side of the question also is being made the subject of experiment and may be dealt with later. The suggestion is that a sheet of bright metal shaped like the teeth of a saw to fit between the sections of a radiator will throw back a large percentage of what is now only "exchange radiation" and thus add greatly to the efficiency of the radiator in its most valuable side, i. e., the radiant as distinct from its convected heat.

For the benefit of any readers who may think the question worthy of further investigation, the following descripton of a method of testing direct radiators practised at least a few years ago by the office of the mechanical and electrical engineer of the supervising architect's office of the Treasury Department in Washington may be of interest.

The Treasury Building was built long enough ago so that its walls are of massive proportions. The sketch shows a view of two windows in one of the sub-basement



Scheme for Testing Direct Radiators.

rooms, the windows looking on the interior court of the hollow square which the building forms in plan. Arrangements were made to place a radiator in each window. If desired the radiators could be readily interchanged so that incidental advantages or disadvantages of one or the other of the positions could be checked by a second test and thus a further certainty of correctness of the test insured.

Each of the windows was provided with a double hung window, and opposite the middle of the lower sash was a platform on which the radiator could be placed. By placing the radiators in the elevated position it was convenient to arrange for catching the water of condensation in metal bottles, and the scheme of testing was to deliver steam at substantially constant pressure to the radiators, to catch the condensation from each of them separately and to weigh the condensation as necessary. The platform for each radiator was about 3 ft. 6 in. above the general floor level. It was about 4 ft. wide and 2½ ft. deep and the distance from the platform to the top of the window opening measured about 4 ft. 9 in.

Steam at boiler pressure was brought to the room and reduced by a reducing valve to the low pressure at which it was desired to test the radiators. The sketch shows the low-pressure pipe line brought to a point opposite the column between the windows where two 1-in. branches were brought downward against the column wall. Each of these dropping supply pipes connected to the side of a separating receiver composed of a vertical length of 3-in. piping. From the top of the receiver the steam connection to the radiator was made. This radiator supply-pipe started a short distance below the cap to the receiver, as indicated, so that the steam might be freed as much as possible from any condensation occuring either within the receiver or in the supply pipe leading to the receiver. The drip for carrying away this condensation is shown at the base of the receiver.

The radiator in each case could be set so that the supply end was slightly higher than the return end, to cause the flow of condensation toward the return connection, in the usual way. The return branch was equipped with a valve and was fixed with elbows, as shown, to give a flexibility to the radiator connection. The water from the radiator was caught in a bottle or flask, as mentioned. This was composed of 4-in. piping, fitted with a gage-glass to determine when the bottle was becoming filled. Each bottle was attached to the return connection by means of a union so that a flask full of water could readily be carried away for weighing. In removing the bottle it was necessary only to shut off the valve in the return branch and also the valve at the top of the bottle.

In the ordinary test steam was allowed to flow through the radiators until water had accumulated in the bottom of the loops, as would be the case after hours of operation. Then if a test were started with the radiator cold, but with the water remaining in the radiator, steam might be admitted until the radiators were thoroughly warm and the condensation for the preliminary run weighed if necessary, but discharged to waste so that the test after the preliminary run could be started with empty water bottles.

The test then amounted to taking the time at the beginning and removing the bottles at regular intervals as they become quite well filled with water. As one flask was removed another was immediately placed in its stead and the test could be conducted so that the water-bottle or flask is removed first from one radiator, and the weight of the water determined and then the flask on the other radiator handled, alternating the removal of the flask and the weighing of the contained water for one radiator and then the other. The weight of the flask empty and of the flask together with the water was, of course, an index to the amount of water collected in a given time. Depending largely on the size of the radiator, the flask could be removed at one-half or one-hour intervals.

To insure that the radiator was free from air, the air-valve at the return end of each radiator was set so that it allowed a slight leakage of steam and similarly a pet-cock located immediately above each water-bottle was left open sufficiently to be sure there was a slight escape of steam at this point. Although not so shown in the sketch,

ordinarily the piping was lagged to minimize condensation outside of the radiators themselves.

Besides maintaining the pressure of the steam supplied by means of the reducing valve, as could be watched by a steam-gage, thermometer wells were provided at both the supply and return ends of each radiator, in the tees as shown. The temperature of the steam as indicated by the thermometer was of course the observation of the temperature inside the radiator. Thermometers within the room placed at points regarded as giving an average value of the room-temperature were used to determine the other feature of the operating conditions of the radiator. Thermometers were also suspended immediately above the radiator and also to one side of the radiator, the former giving an index of the amount of heat supplied by convection and the other an index to the amount of heat supplied by radiation. So far as it was apparent, neither radiator was favored, so far as leakage of air through the outside windows or currents of air within the room were concerned; but, as stated, the radiators could be readily interchanged for comparison. Such an arrangement allowed for regarding one radiator as a standard, testing all other radiators by comparative results.

January 23, 24 and 25, 1912.—The 18th annual meeting of the American Society of Heating and Ventilating Engineers, at the Engineering Societies Bldg., 29 West 39th St., New York City. The officers of the society are: President, Reginald Pelham Bolton, New York City; first vice-president, Prof. John R. Allen, p. t. Constantinople, Turkey; second vice-president, A. B. Franklin, Boston; secretary, W. W. Macon, 29 West 39th St., New York City.

January 24 and 25, 1912.—The 20th annual convention of the Illinois Master Plumbers' Association, at Decatur, Ill. Headquarters will be established at the St. Nicholas Hotel. The officers of the association are: President, F. U. Patterson, Springfield, Ill.; vice-president, Wm. J. Hilliard, Elmhurst, Ill.; secretary, W. C. Haviland, Aurora, Ill.; treasurer, Thomas Cody, Peoria, Ill.

February 5, 6 and 7, 1912.—Annual convention of the Missouri State Association of Master Plumbers, at Springfield, Mo. The officers of the association are: President, J. P. Cunningham, Kansas City, Mo.; first vice-president, Edward C. C. Reisel, St. Louis; second vice-president, G. A. Wood, Springfield, Mo.; treasurer, Jas. P. Carrol, St. Louis; secretary, C. L. Smith, Kansas City, Mo.

February 13 and 14, 1912.—The 21st annual convention of the Ohio State Association of Master Plumbers, at Canton, O. Headquarters will be at the Courtland Hotel, and the convention sessions will be held in the City Auditorium. The officers of the association are: President, Harry S. Smith, Warren; vice-president, John F. Drees, Cleveland; secretary-treasurer, Eb Ellen, 2057 E. 93 St., Cleveland.

February 14 and 15, 1912.—The 18th annual convention of the Master Plumbers' Association of the State of Wisconsin, at Oshkosh. The officers of the association are: President, Geo. F. Reeke, Green Bay; vice president, Louis Sonntag, Sheboygan; secretary, P. H. Ryan, Appleton; treasurer, F. C. Kuetemeyer, Milwaukee.

February 28, 1912.—Winter-meeting of the Central Supply Association, at the Hotel Sherman, Chicago. The officers of the association are: President, Wm. Ivy, St. Louis; first vice-president, P. J. Frey, Minneapolis; second vice-president, C. V. Kellogg, Chicago; treasurer, Edw. F. Niedecken, Milwaukee; secretary, Paul Blatchford, 1524 Tribune Bldg., Chicago.

March 12 and 13, 1912.—The 24th annual convention of the New York State Association of Master Plumbers in Troy, N. Y. The sessions will be held in the Germania Hall and headquarters will be established at the Rensselaer Hotel. The officers of the association are: President, John H. Moran, Albany, N. Y.; vice-president, Frank B. Lasette, New York City; secretary, James H. Doody, Albany, N. Y.; treasurer, Chas. A. Campbell, Watertown, N. Y.

May 7, 8 and 9, 1912.—The seventh annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, in St. Louis, Mo. The officers of the society are: President, Martin Conroy, St. Paul, Minn.; first vice-president, John Hefferman, Houston, Tex.; second vice-president, Lawrence J. Lawler, Pittsburgh, Pa.; secretary and treasurer, Thos. J. Claffy, City Hall, Chicago.

May 13, 14 and 15, 1912.—The annual triple convention of the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association at Norfolk, Va. Headquarters will be established at the Monticello Hotel. F. D. Mitchell, 309 Broadway, New York City, is secretary-treasurer of the American Supply and Machinery Manufacturers' Association.

May 14-17, 1912.—The sixth annual convention of the Master Boiler Makers' Association, at Pittsburgh, Pa. Headquarters will be established at the Fort Pitt Hotel.

June 25, 26 and 27, 1912.—The fourth annual meeting of the National District Heating Association, in Detroit, Mich. The officers of the association are: President, A. D. Spencer, Detroit, Mich.; first vice-president, Warren Partridge, Springfield, Ill.; second vice-president, R. D. de Wolf, Rochester, N. Y.; third vice-president, Cadwallder Evans, Jr., Pittsburgh, Pa.; secretary-treasurer, D. L. Gaskill, Greenville, O.

OFFICERS AND BOARD OF DIRECTORS OF N. A. M. P. MEET IN ST. LOUIS, MO.

The officers and the directors of the National Association of Master Plumbers held a meeting at the Hotel Jefferson in St. Louis, Mo., on Tuesday and Wednesday, January 9th and 10th. All the officers and directors were in attendance as follows: Alfred E. Eynon, Canton, O., president; Frank J. Fee, New York, vice-president; Louis E. Deuble, Canton, secretary; William McCoach, Philadelphia, treasurer; A. Selden Walker, East Orange, N. J.; Walter D. Nolan, Washington, D. C.; John Trainor, Baltimore, Md.; Harry F. Mellon, Wilmington, Del.; David H. Roberts, Cleveland, O.; Andrew F. Curtin, Medford, Mass.; W. Emmet Crosby, Canton, O.; E. D. Hornbrook, Kansas City, Mo.; Chris Irving, Denver, Colo.; Frank U. Patterson, Springfield, Ill.; James Smyth, Spokane, Wash.; Frank J. Klimm, San Francisco, Cal.; L. V. Lambert, New Orleans, La.; Carl J. Stein, Chicago, Ill.; and John H. Moran, Albany, N. Y.

The date for the convention at Salt Lake City next summer will be decided later but a committee was appointed to secure favorable railway rates to this convention. It was also decided that the evening of Monday, February 19th, the 30th anniversery of the organization, should be observed by all the members throughout the country.

The St. Louis Master Plumbers' Association gave an informal dinner in honor of the visitors at the Hotel Jefferson on Tuesday evening.

WILL ATTEND MISSOURI STATE CONVENTION.

The Master Plumbers' Association, of Kansas City, Mo., at a meeting held last week elected the following delegates to attend the State Convention which is to be held at Springfield, Mo., February 5, 6 and 7, 1912: M. C. Enggas, president; J. C. Friel, J. C. Brickey, H. W. Sivewright, Wm. Whitsel, W. W. Preston and Wm. Warmholz. J. P. Cunningham and C. L. Smith, president and secretary, respectively, of the state association, are delegates ex-officio.

THE REAL FACTS ABOUT THAT BOILER TEST.

Editor "Domestic Engineering": I notice in the January 6th issue of "Domestic Engineering" that your correspondent, B. O. Iler, in writing on methods of rating heating boilers refers to a test of a boiler made by the writer and a dozen Chicago heating contractors at the testing plant of a boiler manufacturer.

I wish to state for the benefit of Mr. Iler or any others that may be inclined to believe this test as authoritative, that the statements regarding this test was sent broadcast to the heating trade as well as the architects, in the form of an anonymous letter, the purpose undoubtedly being to discredit the ratings of a certain make boiler, and that the boiler tested under the supervision of the writer was of an entirely different type and size than the one mentioned in the said letter.

As the statements contained in this letter were so utterly absurd and the object so evident, I did not suppose that it would be taken seriously by any one interested in heating boilers, but as Mr. Iler seems to accept same as being authoritative, I take this opportunity of informing the readers of "Domestic Engineering" of the true facts regarding the aforementioned "test."

Chicago. Chas. F. Newport.

BOILER RATINGS AND EVAPORATION TESTS.

Editor of "Domestic Engineering":—After reading B. O. Iler's reply to my former article I am more than convinced that this old chap is a joker, as he has a habit of answering arguments with witticisms.

He states he has the "study habit" and gets his information from reading, observation and experience. Very good, but if the "dope" he reads and hands out is not any more reliable than some he gives us in his last article, I would advise that he investigate his authorities a little more fully. For instance, he refers to a test conducted by Chas. Newport, and I learn from Mr. Newport that he never conducted this test at all, but that this information was received from an anonymous letter sent out to discredit the ratings on a certain manufacturer's boiler. He speaks of the Oslerization of Prof. R. C. Carpenter. Prof. Carpenter refers to heating and grate-surface in the first edition of his book dated Oct. 1st, 1895. Has there been no progress since then (16 years)? I am quite certain that today Prof. Carpenter is in favor of an evaporative test for rating heating boilers.

Mr. Iler states that I will some time learn that low-pressure boilers present entirely different problems than power-boilers—that is what I inferred when I mentioned his method of rating, and I again ask why does he insist on rating low-pressure boilers on the old discarded method of rating power-boilers—on the heating and grate surface.

I stated that "from a number of experiments made by different engineers it has been demonstrated that the number of B. t. u. transmitted per sq. ft. of heating surface varies from 9,000 to 0, depending on the position of same, the rapidity of the circulation of the water over these surfaces, the temperature differences between the water and the fire or gases, and the rate of travel of the gases over the heating surface." I ask, how is it possible for any living man to know all of these conditions, even after a most careful examination of a boiler, etc. He answers, "to learn the conditions look at the conditions, not at some pet boiler or at the moon." Is that a reasonable or intelligent answer?

Regarding the rate of 3½ lb. of coal per sq. ft. of grate he advises. He admits that in a high rate of combustion there is a high temperature in the fire box and good combustion of the volatile gases, but with a low rate there is an unsatisfactory combustion of volatile gases. Why then does he advise 3½ lb. rate, which means such an excessive grate that the combustion will be so slow that the fuel will decompose instead of burn, and at an enormous loss. This is probably why Mr. Iler gets so low a rate of efficiency in his tests, if his grate-surface is based on his ideas.

He refers to Frank L. Busey's tests, which I have before me, and states that they are of great value and prove reliable in practice. He says Mr. Busey concludes a 3 lb. rate is an economical average. I quote a few of his tests as follows:

Test No.	Boiler	Coal	Rate of Combustion	Cost of evaporating 1,000 lb. of water from and at 212 degrees
247	D-1	Pocahontas	1.87	14.75 cents
257	D-1	Pocahontas	3.83	8.85 cents
255	D-1	Pocahontas	7.18	7.19 cents
248	D-2	Pocahontas	1.66	11.74 cents
254	D-2	Pocahontas	3.68	7.14 cents
343	D-2	Pocahontas	7.28	6.33 cents
290	D-1	Illinois	1.76	12.22 cents
284	D-1	Illinois	3.32	9.09 cents
294	D-1	Illinois	7.91	8.35 cents
291	D-2	Illinois	1.80	11.63 cents
295	D-2	Illinois	3.17	8.94 cents
337	D-2	Illinois	8.75	7.81 cents

The above tests are for two different types of boilers and for two kinds of coals, but all show that a 3½-lb. rate to be less economical than the higher rates, and as the rate lowers or raises below or above the highest rates given above, the efficiency drops. Do these tests prove the 3½-lb. rate to be correct? Further, Mr. Busey states, "No effort was made to conduct these tests on a basis of a fixed time, say eight hours, with one firing. The aim was not so much to test the boilers, as the respective merits of the different kinds of fuel, or the same fuel under different conditions." I contend that all house-heating boiler tests should be run on at least an 8-hour firing period and under the average conditions of draft, etc., such as when the boiler is ordinarily installed.

Regarding chimney flues, he seems a little inconsistent. He says "no practical man will hook a boiler to a stack that will not handle it," and that he "would banish the low-ratio boiler from the market" and "revoke the license of the architect who designed the poor flue." This sounds good, but he must remember we are up against conditions and not theories, that there are thousands of poor flues now in and being constructed that we are called upon to connect up boilers to, and they are expected to work, and an ironclad garantee as to heating is to be fulfilled. The responsibility for economy should rest on the owner who furnishes the flue, this being just as essential to him as that he gets a good grade of coal for his money. Can the heating contractor be blamed if the owner supplies the boiler with a poor grade of coal or does not give the boiler proper care and attention? He says ignore the book-ratings, study the conditions and choose a boiler with sufficient grate-area and then use all the heat-absorbing surface the stack will handle. Good advice, but a little inconsistent on his theory of high-ratio boilers, and, should we have an apparently poor flue to

contend with, isn't it better to err a little on the side of a low-ratio boiler, instead of risking trouble in fulfilling our heating garantee? I would like to ask Mr. Iler how he can tell what a flue will do before connecting a boiler to it. I confess I can't or have I yet seen any one who can.

Referring to the boiler in which he remedied the trouble of insufficient hot water. He did nothing but increase the capacity and draft, the excellent draft of course showing more economy than a poor one would, it being necessary to force the boiler formerly to carry the load.

Mr. Iler's method of arriving at the average rate of heat-transmission from the fire and gases to the water is amusing, and is certainly a clever way of 'guessing' as he seems to go on the theory that "figgers don't lie."

He uses Rietschel's constant of 2.6 to 4 B. t. u. per sq. ft. per deg. temperature-difference. We will assume his average of 3.3 is correct, although this depends entirely on the rate at which the water circulates over the surfaces, the rate of travel of the gases, as well as the condition of the surfaces. Say we have a boiler of 100 sq. ft. of heating surface, 65 sq. ft. of which is direct with a temperature difference of 2,000 deg. and 35 sq. ft. of indirect or flue surface with an average temperature difference of say 735 deg., and compare with it a boiler having 35 sq. ft. of direct and 65 sq. ft. indirect. The former would be rated at 566 sq. ft. of radiation and the latter at 441 sq. ft. with a factor of 250 B. t. u. per sq. ft. of radiation per hour. These ratings would be near correct if his method were correct, but is it possible for any one to rate a boiler by this method? Could not the average man "guess" as close, and while looking at the moon, too?

Regarding small water ways and the ¾-in. mains. Some argument there. Again referring to Prof. Carpenter, I would ask does Mr. Iler use the size of pipes advocated in Prof. Carpenter's book, or does he use the modern sizes? I'll venture he is using ¾-in. where the book advises 1-in. or 1¼-in. Will say further that if Mr. Iler understands connecting up the modern cast-iron boilers with small water-ways and rapid circulation, he will never have the trouble in priming referred to.

I am very glad to see that he advises a uniform basis of rating boilers and I am quite confident that when such is adopted, that it will be on an evaporative test simular to such as recommended in my former article. Then, perhaps, Mr. Iler's trouble will be at an end as far as rating of boilers is concerned.

Austin. Drury Lane.

MORE BOILER RATING.

Editor "Domestic Engineering":—Our friend, B. O. Iler, in his spiel in "Domestic Engineering" of January 6th, unburdens his mind of a number of good thoughts, and the article should be read and digested by the boiler men who don't know whether they are afoot or in the band-wagon. Manufacturers may or may not be a safe guide to select boilers by, but if one can manage to obtain the dimensions of the boiler selected, he should soon learn to dope out his own rating. It is generally considered that an average 3 to 4 lb. of coal per sq. ft. of grate per hour is an economical rate of combustion. Also that, depending on the boiler construction, we should be able to transfer from 40 to 50 per cent of the heat in the coal to the water in the boiler.

This question of possible efficiency is where we have to begin to study conditions and boiler constructions, and one of the most important factors in the game is the chimney. The size and height of the chimney and the intensity of the draft available should be studied just as carefully as the construction of the boiler, then they should be studied together. Too large a chimney for a given boiler is just as bad as one too small. A boiler of many sections hitched to a flue with a poor draft will be a disappointment, for it won't burn enough coal to make steam. On the other hand, a boiler with few sections and a large direct flue-passage, when combined with a chimney having a strong draft, will burn too much coal and carry the heat up the flue. The weak draft requires a boiler of few sections and low resistance through the flue, with corresponding low efficiency. The strong draft will be able to overcome the resistance to more tortuous flue-passages and added boiler sections, with resulting higher efficiency. So it is evident that these two factors of boiler construction and chimney proportions must be studied together.

As B. O. Iler suggests, add on all the sections the draft will serve, provided both the flue and water-passages are of goodly proportions. By so doing, the efficiency will be increased and the coal consumption cut down.

This all reminds me of an incident that happened in a southern Indiana city a couple of winters ago. A certain gentleman decided that he wanted a modern heating-system in his home, so had the outfit installed in the summer. Everything appeared lovely until cold weather came, when the outfit refused to heat the house. The owner called in several neighbors for advice. Finally some one suggested that probably the chimney was too small. When this was mentioned to the contractor who installed the boiler, he replied that he knew the chimney was too small, but was afraid if he had said anything about a new chimney, the owner of the house would have given up the idea of a new plant. The result was, that in order to keep warm the owner was compelled to build a new chimney and connect the boiler to it. After that everything was lovely—except when some one mentioned the steam-fitter's name.

In many of the larger cities this question of suitable chimney proportions is being forced onto the attentions of the architects, and the heating men are learning that they are the ones who should have the say as to what kind and size of chimney they shall have to connect their boilers to.

Buffalo, N. Y. Frank L. Busey, M. E.

FORGOT TO BE PLUMBING INSPECTOR.

Editor "Domestic Engineering":—I have seen a number of letter-heads and business-cards, but the one enclosed from a town of 500 population in this state, takes the

C. C. FULGHUM
PRESCRIPTION
DRUGGIST
PHONE 116

HEATING
PLUMBING
GASOLINE ENGINE
PORTLAND CEMENT
SCHOOL SUPPLIES
PAINTS, OILS,
VARNISH

FOUNTAIN CITY, IND 191

medal. It was shown me by a friend solicited for a heating job, fitted with **his system** of hot-water heating, that did not boil water at 212 deg.

How little some of us must know, to confine ourselves to a simple line of work!

M. H. W.

She Knew.

"Doctor—"Well, Mrs. Jones, did you test your husband's temperature, as I told you?"

Mrs. Jones—"Yes, doctor. I put the barometer on his chest, and it went round to 'very dry,' so I gave him a pint of beer, and he's been to work this morning."

Domestic Engineering "First-Aid-to-the-Injured"

Postal-Card Cartoon—No. XIV.

The Danger of Under-Estimating.

OF COURSE YOU CANT. HE'S EATING THAT HAY.
I'VE EVEN HAD THE PUMP ON HER AND I CANT GET A DROP
CONTRACT COW
PROFIT
CUT-PRICE HAY
AM AFRAID WE'LL HAVE TO SELL BOSSY AFTER ALL
GOO, GOO
BOO, HOO. I WANT SOME MILK
"DOMESTIC ENGINEERING"

Beware of the Cow with the Crumpled Horn—"Try de Udder Way."

You would be surprised to know how many of these postal-card cartoons have been distributed throughout the country. They are boring away steadily for the betterment of the plumbing and heating industry. If you can distribute a dozen or two or more of these to advantage in your territory, we will mail them to you free.

CENTRAL SUPPLY ASSOCIATION TO MEET IN CHICAGO.

The Central Supply Association will hold its winter-meeting on Wednesday, February 28th, at the Hotel Sherman, according to the official call just issued by Secretary Paul Blatchford, 1524 Tribune Bldg., Chicago.

ANNUAL MEETING OF STANDARD SANITARY MFG. CO.

The Standard Sanitary Mfg. Co., of Pittsburgh, Pa., held its annual meeting at Jersey City, N. J., on Tuesday, January 9th. All the directors of the company were re-elected with the exception of Kenneth K. McLaren, who was succeeded by John R. Turner.

THE McCRUM-HOWELL CO. ENLARGES ITS NORWICH, CONN., PLANT.

The McCrum-Howell Co., New York City, has recently enlarged its plant in Norwich, Conn., by leasing the machine-shops on Thomas street which were occupied by the American Wood Working Co. until its removal to Rochester, N. Y. A spur track will be built from the Central Vermont Railroad, greatly adding to the facilities for handling the McCrum-Howell products. This company now employs over 750 people, and many more will be needed with the increased space now at its disposal.

THE COCHRAN-SARGENT CO. SUCCEEDS THE U. S. SUPPLY CO.

Moncrieff M. Cochran and Howard H. Sargent, doing business under the firm name of the Cochran-Sargent Co., St. Paul, Minn., have purchased the capital stock of the United States Supply Co., of that city, and have assumed the management. Mr. Cochran, president of the new company, has been associated with Crane & Ordway for the past seven years. Mr. Sargent is vice-president and treasurer. The capital stock has been materially increased, and it is planned to extend the business.

FIRE LOSS OF THE SHIRLEY RADIATOR & FOUNDRY CO. MEANS A BETTER PLANT.

The plant of the Shirley Radiator & Foundry Co., Shirley, Ind., was almost entirely destroyed by fire on the night of January 9th, but the company is planning to rebuild immediately. Fortunately all of the patterns were saved, and one of the largest warehouses, filled with assembled radiation, escaped the flames. The fire will thus cause very little interruption in the company's business.

The fire started about 9 o'clock in the core-room, at the south end of the plant, from an explosion of oil, said to be due to the ignorance or carelessness of a workman, and a strong wind carried it quickly over the entire plant. The office employees were still at work, and finding it hopeless to try to save the plant, turned their attention to the books and records, thus making the loss much less serious than it might have been.

For the past ten years the Shirley Radiator & Foundry Co. has been one of the leading industries of the town, and the working force had recently been increased to 160 people. Experts from the best plants in the country had lately been added to the staff, and the company was looking forward to greatly increased business for 1912. The loss, while severe, will prove a blessing in disguise, however, for the company has planned to rebuild at once on a much larger scale, with all modern machinery and every possible device to facilitate handling its products. It is expected that the new building will be ready in a few months, and that the trade will be cared for with but a slight interruption.

PERSONAL MENTION.

Paul Blatchford, Tribune Bldg., Chicago., secretary of the Central Supply Association, left last Tuesday for Bellaire, Fla., where he plans to spend a few weeks. He was accompanied by his family. Golf-sticks, shark-catching paraphernalia and kodaks formed a part of his outfit and his friends expect that he will bring back with him several miles of moving-picture films showing his golf-ball in action.

Clyde Johnson, for the last three years with the N. O. Nelson Mfg. Co., St. Louis, Mo., and formerly with Fairbanks, Morse & Co., has accepted a position in the offices of Cahill, Swift Mfg. Co., 1119-1125 Walnut St., St. Louis, Mo.

NEW QUARTERS FOR THE VAPOR HEATING CO'S. NEW YORK OFFICE.

It is announced that owing to the great increase in business last year, the Vapor Heating Co. of Philadelphia has again been compelled to secure larger quarters for its New York office, and is now located on the fifth floor of the Townsend Building, 1123 Broadway. The president of the company, A. P. Broomell, who is the patentee of the system, is also patentee of the Victor Cleaner and president of the Victor Cleaner Co., and the New York office of this company is combined with that of the Vapor Heating Co., under the management of Chas. E. Scott.

NEW YORK CHAPTER OF THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.

The regular monthly meeting of the New York Chapter of the American Society of Heating and Ventilating Engineers was held in the Engineering Societies Building, 29 West 39th St., New York, Tuesday evening, January 9th, at eight o'clock. Pres. W. M. Mackay presided. The secretary called the roll and read the minutes of the previous meeting, which were approved as read.

A committee was appointed, consisting of Messrs. Macon and Feldman, to represent the chapter at a meeting held in the building where a topic relating to "How a Society Should be Run" was being discussed.

In the absence of the chairman, D. D. Kimball, the report of the chapter's committee on arrangements for the annual meeting of the American Society of Heating and Ventilating Engineers was read by Thomas Barwick, a member of the committee. This outlined the entertainment features of the coming meeting calculated to be attractive to visiting members and ladies.

The following committees were announced:

Dinner Committee: R. P. Bolton, W. W. Macon and D. D. Kimball.

Meetings Committee: M. F. Thomas, C. Kiewitz and F. T. Chapman.

Entertainment Committee: Thos. Barwick, E. E. Fox and W. LeCompte.

F. T. Chapman, chairman of the chapter's committee to

make recommendations regarding the ventilation of moving-picture show-places, then read the report of the committee. After some discussion the following report was accepted by the chapter as read:

"Your committee, acting from a practical standpoint rather than from an ideal viewpoint, advances the following recommendations for legislation to cover this important phase of the needed general regulations of motion-picture theaters:

"1. Floor area per Occupant: A minimum of 5 sq. ft. of floor-area per occupant, exclusive of passage-ways, shall be provided in the audience-hall.

"2. Cubic Space per Occupant: A minimum of 90 cu. ft. of air-space per occupant shall be provided in the audience-hall.

"3. Quantity of Outdoor Air. A positive supply of outdoor air from an uncontaminated source shall be provided the audience-hall at all times while the show-place is open to the public, and the quantity of this positive supply of outdoor air shall be based on a minimum requirement of 20 cu. ft. per minute, per occupant.

"4. Temperature: The temperature of the air in the audience-hall shall be maintained throughout at the breathing-line (persons being seated) within the range of 65 deg. to 70 deg. F. and the temperature, distribution and diffusion of the supplied outdoor air shall be such as to maintain this result without uncomfortable draughts.

"5. Direct Heat Sources: Any good heat source which does not contaminate the air, will be accepted to supplement the warmed outdoor air supply. Gas-heaters or coal-stoves are prohibited.

"6. Machine-Booth Ventilation: Enclosures or booths for the motion-picture machines shall be provided with special exhaust-ventilation positively changing the air in the booth at least six times per hour, and being entirely independent from any exhaust-ventilation of the audience-hall. This ventilation shall consist of a number of small metal screened openings near the bottom of the booth, and a metal or other fireproof flue (size not less than 15-in. diameter) extending from top of booth and carried to proper place of discharge outdoors and augmented by mechanical appliances or otherwise to secure the results herein stated.

"General questions, such as inspection, method of enforcing the requirements, penalties for non-compliance, etc., are left for each town or city to determine."

The topic of the evening was "Temperature Regulation for Residence Heating," which was discussed at length by the members. The meeting then adjourned.

Those present were: Arthur Ritter, Frank K. Chew, Jos. Graham, W. M. Mackay, Melvern F. Thomas, Thos. Barwick, Conway Kiewitz, E. J. Trent, W. W. Macon, A. M. Feldman, H. J. Barron, S. C. Parter, W. S. Timmis, R. C. Taggart, F. T. Chapman, R. P. Bolton, J. P. Lisk, J. A. Donnelly, Mr. Wickes.

The chapter at the present time consists of 58 members, two honorary members, three associate members and one junior, making a total membership of 64.

PROGRAM FOR THE 18TH ANNUAL MEETING OF A. S. H. & V. E., ENGINEERING SOCIETIES BLDG., NEW YORK CITY, JAN. 23, 24 and 25, 1912.

For convenient reference, we give the following summary of the program, which follows in full.

Program Summarized.

Tuesday, 2 p. m.: Business and professional. 8 p. m.: Professional, of a semi-popular nature, illustrated with lantern photographs.

Wednesday, 2 p. m.: Professional, devoted wholly to ventilation problems. 6:30 p. m.: Annual dinner.

Thursday, 10:30 a. m.: Professional. 2 p. m.: Professional.

Tuesday, January 23d.

Afternoon.

1:00 p. m. Registration and informal reception of members, ladies and guests, in foyer, ground floor, Engineering Societies Building.

2:00 p. m. Business session: Roll-call. Reading of minutes of previous meeting. Address by President R. P. Bolton, "The Use and Abuse of Fuel." Reports of Secretary, Treasurer and Board of Governors. Reports of Committees on Compulsory Legislation, Standards, Tests, Revision of the Constitution, Air Leakage and Ventilation of the Closed Room, and Heating Guarantees. Report of Local Chapters. Appointment of tellers of election of officers. New business. Papers: "Heat Exchange Diagram: Its Application to the Theory of Air Washers," N. W. Akimoff, Philadelphia; "Drying Apparatus," H. C. Russell, Washington, D. C.

Evening.

6:30 p. m. Reunion and registration in the foyer of the Engineering Societies Building.

8:00 p. m. Report of tellers of election of officers.

Introduction of President-elect. Addresses illustrated by means of the stereopticon, including probably some motion-pictures, may be expected on the following subjects: The growth or development of the skyscraper; the features of mechanical plants of buildings; the electrified home; safety provisions for industrial establishments.

Wednesday, January 24th.

Afternoon.

2:00 p. m. Session on Ventilation. Report of Committee of Schoolroom Ventilation, appointed to act in conjunction with a similar committee of the American Association of School Hygiene. Papers: "Ventilation Questions," D. D. Kimball, New York; "Dust in Relation to Heating," Konrad Meier, New York; "Effect of Humidity and Means for Control," J. I. Lyle, New York; "Chemical Notes on Ventilation," Percy Norton Evans, Lafayette, Ind. An informal presentation of the work of the Chicago Ventilation Commission is to be made by S. R. Lewis, Chicago. General discussion of the session's papers.

Evening.

6:30 p. m. Gathering and informal reception in Egyptian Room, Murray's, 228 West 42d St. 7:00 p. m. sharp Dinner, Peacock Room, President Reginald Pelham Bolton presiding. Speakers: Miss Helen Varick Boswell (Chairman, Industrial and Social Conditions Department, General Federation of Women's Clubs); Dr. Luther Halsey Gulick (Director, Department of Child Hygiene, Russell Sage Foundation).

Thursday, January 25th.

Morning.

10:30 a. m. Professional session: Papers: "Steam-Heating Large Department-Stores; Its Relation to Their Electrical Requirements," Davis S. Boyden, Boston; "Hot-Water Heating by Forced Circulation," Ira N. Evans, New York; "Auxiliaries for Pressure Systems of Hot-Water Heating," J. J. Wilson, Philadelphia; "Steam-Heating from the Receiver of the Compound Engine," Auguste Beaurrienne, Paris, France, Secretary Association des Ingenieurs de Chauffage et de Ventilation de France; "Heating of a Steam Laundry," A. M. Feldman, New York. Topics for discussion: Ventilation of motion-picture theaters. Frank T. Chapman has been asked to open the discussion. Efficiency of labor-element in heating-industry. August Kehm has been asked to open the discussion.

Afternoon.

2:00 p. m. Professional session. Papers: "Heat-Transmission with Indirect Radiation," Frank L. Busey, Buffalo, N. Y.; "Tests of Vacuum-Cleaning Tools and Exhausters," M. S. Cooley, Washington, D. C.; "Definition of the Unit of Heat," Reginald Pelham Bolton, New York; "Heating a Swimming-Pool," Cesar Teran, New York. Topics for discussion: Most practicable and efficient method of distributing air—small volumes and high velocities, and vice versa. Interchange of information among national heating engineering societies. The wisdom of employing the direct-connected fan-motor. Advisability of standard form of pitot tube and manometer for air-velocity measurements.

Entertainment Program—Especially for the Ladies.

Tuesday, January 23d.

1:00 p. m.—Taking part in registration and informal reception.

8:00 p. m.—The ladies are invited to the evening session, which is intended to be of interest to them.

No other entertainment is provided for this day, it being felt that irregularity of arrivals would make it impossible, while many would prefer to have the afternoon of this day left to their own disposal. Members of the Ladies' Committee will be on hand during the afternoon and evening to advise and assist visiting ladies and provide guides where required.

Wednesday, January 24th.

10:30 a. m.—Excursions for ladies, members and guests to inspect Chelsea Docks and large transatlantic liner (name to be announced later), in charge of Mr. Barwick. To New York Public Library, including plant, in charge of M. Thomas.

1:00 p. m.—Luncheon to visiting ladies (place to be announced).

2:00 p. m.—Two matinee parties, in charge of Mrs. Barwick, Mrs. Macon and Mr. LeCompte: Kismet, Knickerbocker Theater. The Quaker Girl, Park Theater.

6:30 p. m.—Gathering and informal reception in Egyptian Room, Murray's. Gothic Room reserved for the convenience of the ladies. 7:00 p. m. sharp—Annual dinner in Peacock Room. Members may select their table in advance if desired.

Thursday, January 25th.

10:30 a. m.—Excursions (for ladies, members and guests): To American Museum of Natural History, Mrs. von Rehm in charge. To Metropolitan Museum of Art, Mrs. Barwick in charge. To Tiffany's, Mrs. Bolton in charge.

1:00 p. m.—Luncheon to visiting ladies (place to be announced).

2:00 p. m.—Automobile ride for the ladies, as guests of the New York Chapter, through Central Park and along Riverside Drive, followed by tea at the Waldorf-Astoria Hotel, Messrs. LeCompte and Barwick in charge, assisted by the ladies of the Ladies' Committee. It is probable that special automobile-busses will be obtained for the occasion.

8:00 p. m.—Hippodrome party, in charge of Mr. LeCompte, assisted by the ladies of the Ladies' Committee. It is hoped that a large number will attend that the convention may end enjoyably for all.

General Information.

The Engineering Societies Building will be headquarters throughout the convention. Registration and information will be arranged in the foyer on the ground floor. Members, ladies and guests are requested to register and give answers requested regarding excursions, banquet and theater parties immediately upon arrival, and receive programs and badges.

Telephone booths are available, and members can be directly communicated with at any time during the convention. A commodious room for ladies is available directly off the foyer, in which a maid will be in constant attendance. The Gothic Room at Murray's will be at the service of the ladies during Wednesday afternoon. A writing-room, opposite the entrance on the ground-floor, is provided for members and guests. Check-rooms are available on the mezzanine floor of the Engineering Societies Building, and gentlemen's dressing-rooms are available on the basement-floor at the foot of the main stairway.

All sessions will open promptly at the time stated in program. All excursions will start from the Engineering Societies Building at the time stated, except in the case of the excursion to the Chelsea Docks and steamship, in which instance those desiring to make this inspection will meet at the docks at time stated.

Application blanks for membership will be obtainable of the secretary and at the information booth. It is desired that no trade-literature shall be distributed in the auditorium; this, if desired, to be done in the foyer, ground-floor.

It is hoped that all conferences or conversation not relating to the business at hand may be avoided in the auditorium during sessions.

The papers for each session will be delivered to those attending upon entering the auditorium.

The secretary's office on the eighth floor is available for committee-meetings.

Particulars regarding visits to interesting installations may be had at the information-booth. In this connection a cordial invitation is extended by James A. Donnelly to inspect at his laboratory at 132 Nassau St., the methods followed by the committee on tests in testing radiators.

Particulars regarding hotels may be obtained from the information-bureau.

WHERE THE CENSUS BUREAU SNORES.

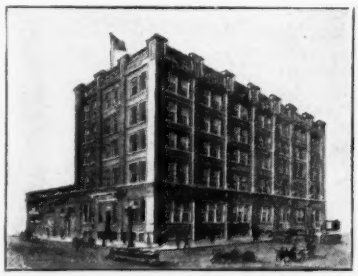
While the Census Bureau of the Federal Government has been given unlimited authority to gather statistics on almost every branch of business in the United States, it has just developed that no provision has ever yet been made for the gathering of information concerning the plumbing trade.

From time to time the Census Department, through its able director, E. Dana Durand, issues many bulletins on varied lines of business, yet nothing has ever been gathered concerning one of the most important lines of trade in the country.

There is no denying the fact that information concerning the plumbing trade by the Census Bureau would prove one of the most timely and interesting bulletins the department ever assembled.

THE LEIGHTON SUPPLY CO'S. HOUSE-WARMING.

The Leighton Supply Co., Fort Dodge, Ia., was "at home" all day on Thursday, January 11th, to customers and friends. The day was spent in receiving guests and showing them through the new building at the corner of First avenue South on 13th street. The building is fireproof, 60x140, five stories and basement. It contains an up-to-date show-room, with a complete line of sanitary fixtures; large, well appointed offices, with modern equipment, and stock-rooms for the various departments. The Leighton Co. handles plumbing and heating lines, factory



The New Home of the Leighton Supply Co., Fort Dodge, Ia.

and mill supplies, pipe and fittings, windmills, pumps, etc. About 150 customers from all parts of the state, as well as many representatives of the manufacturers whose goods the Leighton Co. carries, visited the new building during the day. At 7 p. m. an elaborate banquet was served on the third floor. C. B. Sherman, assistant general manager and purchasing agent, was toastmaster, and short speeches were made by Mayor John Ford, of Ft. Dodge; Frank Corby, Mark Mfg. Co., Chicago; Mr. Burnett, Vaile & Kimes, Dayton, O.; Frank Keeler, Rockford Brass Co., Rockford, Ill.; W. H. Irons, Peerless Selling Co., Evansville, Ind.; F. R. Mason, of Webster City, Ia.; Frank Bellows, Humboldt, Ia.; E. I. Leighton and others. Mr. Leighton, who is secretary and general manager of the company, is to be congratulated on the progressive spirit shown and the rapid growth of this concern.

WILL MANUFACTURE OR DEAL IN PLUMBING AND HEATING SUPPLIES.

Among incorporations recently announced are the following:

The Hydraulic Flushometer Co., capital $200,000; president, Leo. Simmons, Hunters Station, Va.; vice-president, A. C. Clark, Washington, D. C.; secretary, T. H. Pickford, Washington, D. C.

The Williams-Busching Supply Co., Ft. Wayne, Ind.; capital stock, $20,000; directors, Wm. Hochmeyer, Wm. Busching, Paul Hollman and Mary Busching. The new company will deal in plumbers' supplies.

James T. Cox, Paterson, N. J., dealing in plumbers' supplies, has been incorporated with a capital of $50,000 by Jas. T. Cox, Elizabeth Cox and A. R. Vandervoort.

The Hinsdale-Meyer Co., of Manhatten, N. Y., has been incorporated with a capital of $30,000 by Winfield E. Hinsdale, Herman Meyer and Louis Bachmann, to manufacture plumbing supplies and sanitary fixtures.

The E. W. & L. K. Peck Co., Grand Rapids, Mich., dealers in and manufacturers of plumbers' supplies, heating supplies and specialties, has been incorporated with a capital stock of $15,000 by Louis K. Peck, E. W. Peck and A. E. Peck.

AN INTERESTING GATHERING OF SALESMEN

A highly prosperous and aggressive-looking group of men was assembled at the club-room of the Hotel Bismarck on the evening of January 11th. A tall saturnine form appeared in the doorway, clinging tightly to an anglicized accent, and addressed them thusly: "Pawdon me, I don't wish to intehwupt you, but I would just like to awsk you a question. You Americans are soh deceptive, doncherkow. Is this a gawthering of Carnegies in embryo, or an anti-suffraget meeting, by Johve?"

"O! J. M.," said one of the group, "just get Turner of the Pump Department and see if he can pump up what this gentleman wants to know."

The ubiquitous Turner came, and informed the inquisitive one that a seat at the table would provide him with a vantage-point by means of which he might satisfy himself of these things, hence this report.

Introductions followed. J. M. Weil, head of the country credit and sales-department, and who officiated as a peripatetic major-domo, making everybody feel at home, introduced the stranger to the important personages herewith cited below.

Isadore and Benjamin Weil, founders and proprietors of the rapidly growing business of Weil Bros., Chicago; James Ketchum, head of the heating department; O. G. Wurster, assistant heating manager; J. E. Moran, chief of the plumbing department; A. W. Turner, head of the new pump department; E. J. Kelley, expounder and impounder of city credits, who is ably assisted by W. M. Pincus, assistant credit and purchase; P. F. Fisher, chief-clerk; Harry Pillman, receiver of voluntary contributions on account and vacuum cash-extractor from hard cases.

The office-force in all its beauty was arranged thusly: Bayford Detlor, R. L. Hanschke, A. W. Katz, Frank Healy, cashier, Oswald Evert, bookkeeper.

The city sales-force was composed of F. W. Binder, Jos. Lajanesse, E. F. Gallagher, M. H. Schulhof, Thos. McCarthy and R. C. Tapper.

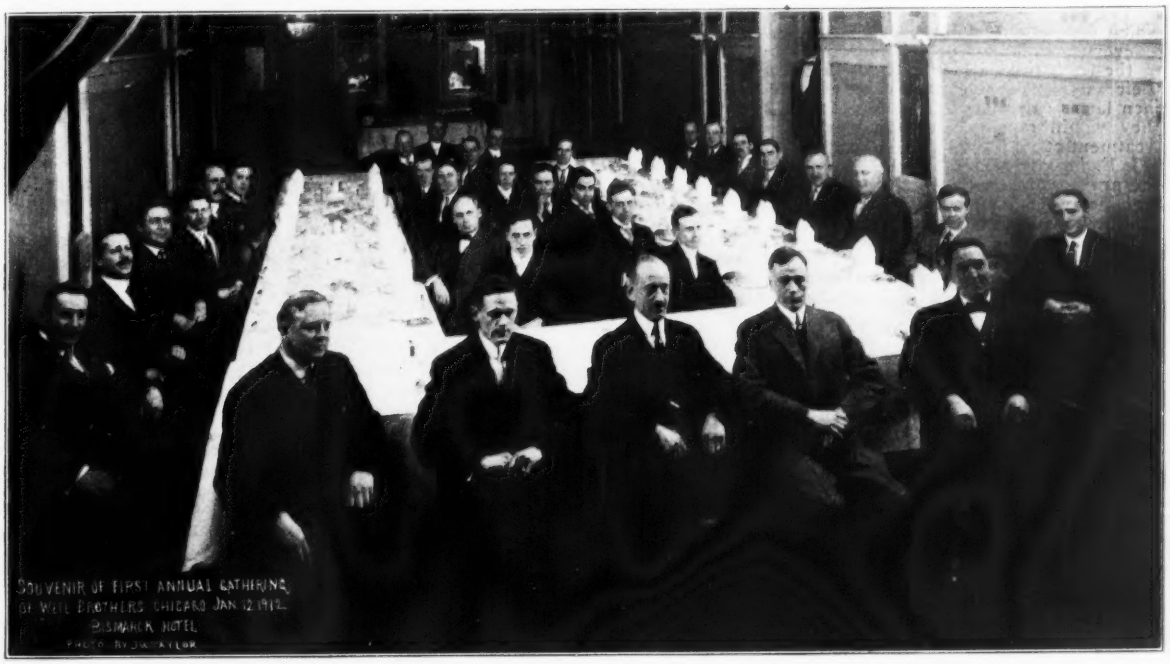
Wisconsin needs are taken care of by F. E. Nolan and Chas. Aton. Illinois is covered most efficiently by Geo. McCarthy, Chas. Brayley, Jas. McKinney and P. W. Ullbrech.

C. L. Baker toots Weil goods throughout Indiana, and J. W. Cline toothcombs the prospects of Michigan.

J. L. Bauer has for his territory Illinois and Wisconsin. L. A. Zinser divides his selling efforts between Illinois and Indiana, and J. H. Krahl is interested in Indiana and Michigan. The pioneer of a rapidly extending Iowa business is Guy H. Carleton.

This was the first annual gathering of the Weil Bros.' force. The business has been established 23 years, commencing in 1889 with tools and hardware supplies. Four or five years later plumbing goods were taken up, as offering a field for legitimate business development, and about five years ago a heating department was established, which has proved most successful, and Jan. 1, 1912, witnessed the addition of a powerful and well-equipped pump department, of which great things are promised.

Weil Bros. commenced business on West Randolph street and are now located at 651 W. Lake street, with warehouses at 666 Austin avenue and 625 N. Green street. They have been located five years at the present building, which is of brick, 250x125, five stories in height, with office and show-room on the second floor, the balance being devoted entirely to stock. The firm employs about 100 people, many of whom have been with it for a considerable number of years.



The First Annual Banquet of the Office and Sales Forces of Weil Bros., Chicago.

After a flash-light picture had been taken, the participants did justice to an excellent banquet, and the evening was devoted to speech-making and stories of reminiscences.

As soon as pipes of peace had been lighted, I. Weil extended a hearty welcome to every one there and expressed his sincere pleasure in being able to be with them for an entire evening in a social way. He believes that functions of this character would be helpful to them throughout the years to come, and promised even better times at succeeding gatherings.

J. M. Weil then took the toastmaster's role, and called on James Ketchum. Mr. Ketchum, in charge of the heating department, made a telling speech which touched the vital spot in effective salesmanship. He believes that the salesmen should see to it that their customers become educated in the best heating practice, and does not believe it good policy for heating concerns to make a business of figuring out all the installations for their customers, or drawing up the plans for them. Mr. Ketchum contended, and rightly so, that while the customer is entitled to assistance in times of difficulty, it is better for the customer and the trade at large that he be taught how to do things for himself, rather than have them done for him. He used as an example to point his argument the backwardness that might be expected from children for whom the

teacher solved or worked out all their arithmetic examples. The way to treat the steam-fitter, said Mr. Ketchum, is to teach him the rules of the game, and how to apply those rules to the special job before him. Speaking especially to them as salesmen, he urged loyalty and harmony as being essential to success.

I. Weil spoke of the value of co-operation. As one of the founders of the concern, he believes that the main cause of the success of Weil Bros. since its humble beginning has been that every one connected with the concern, from the office-boy up, has been taught to believe that he is a co-partner in the success of the enterprise. No employee has ever been considered as holding a position from which a suggestion for the betterment of the company's work could not be profitably received.

J. M. Weil, who has been for 12 years with the company, then outlined some of the essentials of future development. He referred to a new department, which will handle pump, well and engineers' supplies. This is in the hands of A. W. Turner, master of pump technique, professor of languages and originator of encomiums.

Mr. Turner, in speaking to his "fellow-Swedes," championed the strongest kind of team-work, the success of which depends upon the ability, perseverance and loyalty of every member of the team. He gave splendid tribute to the friendly relations existing between Weil Bros. and their employees, and attributed the success of the salesmen largely to their knowledge that from the head office they would receive support, sympathy, advice and fair treatment at all times.

J. E. Moran, head of the plumbing department, told of the progress of the office under his charge, and gave several instances of the reasons for its success. Mr. Moran said he hoped the table would grow larger by next year.

There followed in turn a number of speakers, including Messrs. Baker, Allbrech, Munn, de Joannis, Marsh, Kelley, Aton, Nolan and McCarthy. Before the evening closed, practically everybody contributed to the entertainment. A hearty vote of thanks was given to Weil Bros. by the assembled company and the gathering dispersed with pleasant recollection of comradeship made manifest.

THE HORIGAN SUPPLY CO., ST. JOSEPH, MO.

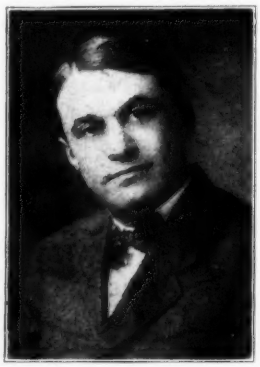
About 18 years ago the Horigan Supply Co. began its business-career in a two-story building of 40 ft. frontage. From this small enterprise it has grown until its volume of business demands the present imposing four-story building at 209-215 S. Fourth St. to accommodate it. The credit for this expansion is due to the excellent management of the president, J. J. Horigan, and the secretary and treasurer, J. J. Flynn, for they have served in these

The New Home of the Horigan Supply Co., St. Joseph, Mo.

capacities since the inception of the concern. The Horigan Supply Co. handles water, gas, steam and plumbers' supplies, engineer and mill supplies, pumps, windmills, tanks, etc. It also manufactures compressed-air tanks for domestic water-supply systems, and the well-known Horigan aqua expansion-tank for hot-water heating. The illustration shows effectively the magnitude of new Horigan headquarters at which all plumbers and steam-fitters will be welcomed.

NOW WITH THE BEST MFG. CO.

J. H. Trattner, who for several years has been connected with the Monarch Brass Co., of Cleveland, O., is now representing the Best Mfg. Co., of that city, in Illinois, Iowa,



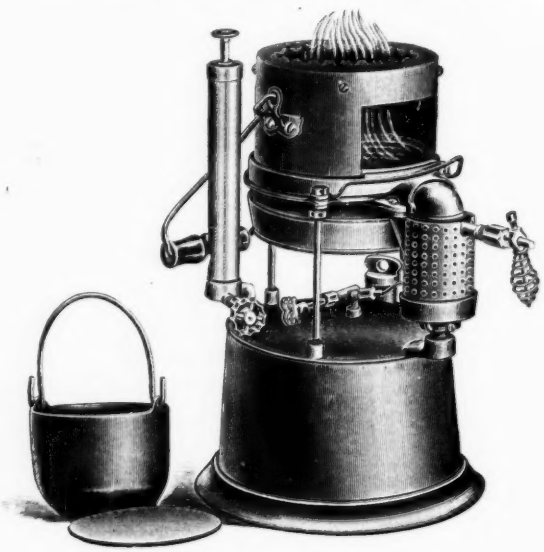
J. H. Trattner.

Wisconsin and Nebraska. We take pleasure in showing Mr. Trattner's likeness, so that those in the trade who have not yet had the opportunity of meeting him personally will be ready to welcome him as he makes his rounds.

THE LUNDY DOUBLE-BLAST FIRE-POT.

The Lundy tinners' and plumbers' fire-pot is claimed to melt lead and heat soldering-irons twice as fast as the ordinary fire-pot, and with less gasoline. It has four specific points of construction which contribute to its efficiency and economy.

First, it has an independent gasoline-valve for generating, so that in case the operator does not obtain sufficient heat at the first attempt, he may open the valve again and allow more gasoline to flow into the drip-cup without the loss of time common in most cases. Under ordinary conditions, the fire must be allowed to burn out and the generator to cool off before additional gasoline can be introduced into the drip-cup.



The Lundy Double-Blast Fire-Pot.

Second, the opening at the point of generation is 5/8-in., so that it has no small channel to clog up. The brass needle passing through the hole in the generator does not increase the size of the hole. The gas is cut off with the end of the valve-stem, ensuring a constant blue flame and therefore a constant intense heat. The generator is made of brass and will not rust.

Third, the Lundy fire-pot is equipped with a large brass pipe, one inch in diameter, which will supply sufficient air to run the fire all day in one minute. This constant air-supply will meet a definite need.

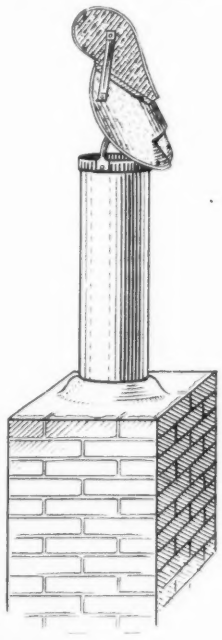
Fourth, the tank is directly under the burner, and has a capacity of one gallon. Its top is made of gray iron, galvanized, and it has an iron base for protection to the tank-bottom.

Fifth, the delivery of the flame is from the outside to the center, the burner making a complete circle. This forces all the heat at all times upon the melting-pot or soldering iron, ensuring a very rapid heat.

The manufacturer of the Lundy fire-pot is the Double-Blast Mfg. Co., North Chicago, Ill. For using gas, either manufactured or natural, the Lundy double-blast gas fire-pot is supplied, with special construction, producing equal efficiency and economy as the gasoline fire-pot described above. The principle of all the Lundy fire-pots is the same, and they are meeting with the approval of the trade. Further information can be obtained from the company upon application. Mention "Domestic Engineering" when you write.

THE D. & T. DRAFT-INCREASER.

The D. & T. Mfg. Co., St. Louis, Mo., is sending out literature describing its new cure for smoky chimneys. It is known as the D. & T. draft-increaser. It consists of a hood which works with the wind and works constantly, as there is only one bearing to work on. The ordinary type of hood used for this purpose has to work



The D. & T. Draft-Increaser.

on four bearings, and frequently goes wrong. The illustration shows the nature of the hood, and the opening at its base is the draft-creative part. The top is a fire-clay chimney-top, offering no chance for corrosion, as often takes place with the regular galvanized chimney-top. Full particulars concerning the device may be obtained by writing the company. In writing, mention "Domestic Engineering.

CHICAGO LETTER.

By Diogenes.

The death of Richard T. Crane, president of the Crane Company, last week, as commented upon in the last issue of "Domestic Engineering," is still the dominant subject of interest for the week just closed.

"A big man has gone." Such, no matter what his own private opinion of the views that Mr. Crane has championed, is the tribute that every heating man who has been interviewed has paid to the "Ironmaster.' One of these gentlemen, perhaps prompted by the nickname that naturally fastened to so rugged a character, said: "I consider him as great a man as Carnegie."

Although not precisely a new thought, for in the striking personalities and in the business enterprises of these two prominent men there has been a similarity that has frequently evoked comparison, still, coming at this time from such a source, the declaration has a wide significance. It reflects the judgment of a man eminent in the local heating profession who knew Mr. Crane not merely "in a business way" nor through hearsay, nor the columns of the press, but on the higher and more intimate plane of personal friendship. From this position of great advantage he declares that the "Ironmaster" was as great a man as the "Laird of Skibo." Proportionately as great a philanthropist and quite easily as great-hearted an humanitarian.

"Above all else," said this commentator, "I have respected him for his sincerity. On the subject of higher education I have no convictions intended for publication, but this I do know, that Mr. Crane's belief in its inefficacy as a foundation for a business-career was as deep-rooted and genuine as his sense of right and wrong. He respected every man in his opinions, whether they corresponded to his own or not, yet where and when and by what means he could he sought with characteristic force to convert the public to his theories."

His supreme indifference to obstacles meant much in the accomplishment of his career. It has been said of him that no other commander-in-chief of a huge business enterprise has had so marked an ability to surround himself with highly efficient aids and at the same time so thoroughly to pervade the whole organization with his dominant ideas.

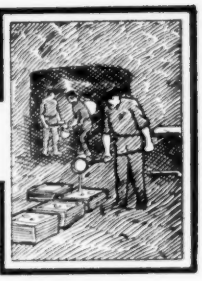
Another local heating man having listened to and seconded the appreciation pronounced by his brother, said that one of the most happy incidents of a call at the general offices of the Crane Company was the cheery welcome accorded by "Father" Crane who, at the age of 80, still wore the harness of duty and retained a remarkable memory for every face and name.

Still a third characterized the "Ironmaster" as the perpetual-motion fly-wheel that drove the whole machinery, and held it in perfect balance.

That Wm. A. Pope was selected, among other representative Chicago men, to act as honorary pall-bearer at Mr. Crane's funeral, was a mark of courtesy to the gentlemen in the heating business that has elicited much favorable comment.

The first meeting of the New England Association of Plumbing Inspectors, formerly the Massachusetts Association, will be held at the Elks House, Somerset St., Boston, Mass., on Saturday, January 27th. The meeting will be called to order at 12:30 p. m. Ernest P. Bates, 48 Pynchon St., Springfield, Mass., is secretary of this new organization, and he will be glad to give plumbing inspectors not connected with it full particulars about its aim and purpose.

THE METAL MARKET



IMPROVEMENT IN PIG IRON.

The greatest improvement noticed in the iron trade was the unfilled orders of the U. S. Steel Corporation, which increased practically 1,000,000 tons. The unfilled orders of the Steel Corporation now amount to more than 5,000,000 tons, a larger amount than any time since March 31, 1910. The order-books are so well filled that the mills of the corporation could run for the next five months at full time if no other orders were received. Pig-iron buying has been light, but there is very little unsold iron on hand and the daily capacity of the blast furnaces in December was slightly less than in November, practically 700 tons a day less. An industrial concern which buys iron and steel for plants all over the country, has taken on quite a large tonnage for its mills in and about the Chicago district. In the West no considerable activity has developed within a fortnight.

Quotations are as follows:

Southern foundry No. 2 Birmingham	$10.00
Northern foundry No. 1 New York	15.00 to 15.25
Northern foundry No. 2X New York	14.50 to 14.70
Northern foundry No. 2 plain, New York	14.50 to 14.75
Northern foundry No. 2 Chicago	14.00 to 14.50

OLD IRON.

While there has been no large buying, there has been a more hopeful feeling in the trade, and selling prices are slightly higher.

Quotations in New York are as follows:

Heavy melting steel	$10.25 to $10.50
No. 1 Railroad wrought	12.50 to 13.50
Wrought pipes and tubes	9.75 to 10.00
Cast borings	6.50 to 6.75
Machinery cast	11.00 to 11.50
Wrought shop turnings	7.00 to 7.50
Stove plate	8.75 to 9.00
Grate bars	8.00 to 8.50

LEAD.

The market is steady, but consumers are not buying in large quantities. The general price is 4.50 cents New and 4.35 cents Pittsburgh.

SPELTER.

An advance of 20 cents per 100 lb. had no effect on the market. Consumers are so thoroughly disgusted over the advance in the fall that they refuse to believe anything regarding the situation. In New York Prime Western Spelter sells at 6.50 cents and in St. Louis at 6.30 cents.

LARGE REDUCTION IN COPPER STOCKS.

The monthly report of the Copper Producers' Association was distinctly favorable to the mining interests. The production in December was larger than the previous month by 11,000,000 lb., the total production being 123,000,000 lb. The deliveries, however, amounted to 145,000,000 lb. the largest of any month in 1911. Stocks were reduced during the month 22,000,000 lb. leaving a stock as of January 1st of practically 90,000,000 lb. of copper. This is the smallest amount recorded since the Copper Producers' Association began to issue its reports. The market responded to this news, although it had been fairly well discounted in advance, and copper is now fully half-a-cent higher than a week ago, sales of Lake having been made at 14.52½ and electrolytic at 14.50 cents. The amount of business transacted, however, has been small, but the mills continue to take large quantities of metal and are shipping an enormous amount of brass and copper products.

WHERE PLUMBING AND HEATING MATERIALS WILL BE NEEDED.

From all parts of the country come reports of renewed activity in building construction, which is bound to make big business for the plumbing, heating and ventilating interests, especially those accustomed to large contract work. It is asserted by many architects that 1912 starts out like a big year, and that the asking of bids on construction work is opening much earlier than in former years.

Some new pieces of business which are really worth while going after just now are to be found in the following report:

Carnegie, Pa.—St. Luke's Roman Catholic Church is to erect a new brick church with 12-class rooms, tile-floors, toilets, steam-heat, and combination chandeliers.

Lynchburg, Va.—Pres. W. W. Smith, Randolph-Macon Woman's College, has announced plans for a $60,000 college building.

Toledo, O.—The Board of Education plans a new school with swimming-pool, shower-baths, and manual training, to be two stories high.

Greenville, Ky.—J. J. Rice, county judge, may be addressed concerning the erection of the new county jail, which is to be of brick, steam-heated.

Benton, Mo.—The county commissioners will erect a fireproof court-house. Specifications may be procured from the County Clerk of Scott County, or from the architect, H. H. Hohenschild, 312 Navarre Bldg., St. Louis, Mo.

Waco, Texas.—The Sisters of St. Mary plan to erect a convent school.

Dallas, Tex.—The Board of Education will erect a $20,000 school.

Washington, D. C.—District of Columbia Commissioners are to erect a manual training school for negroes here, costing $160,000. It will be of fireproof construction, and include laundry.

Richmond, Va.—C. P. Walford, supervisor of public schools, is taking bids on a $100,000 school of brick and terra cotta, with modern plumbing.

Beaumont, Tex.—Separate bids for plumbing and heating system are being received on a new school.

Cincinnati, O.—The Gibson House will erect a $1,250,000 hotel building nine stories on one street and twelve on another.

Pittsburgh, Pa.—An apartment-building will be built by John McSorley, after plans drawn by Architects Parry & Thomas, of Chicago. The owner will award all contracts, including modern plumbing and brick veneer fireproofing.

Atlanta, Ga.—The Georgia School of Technology is to erect brick buildings for power and heating systems.

Indiana, Pa.—The Y. M. C. A. will receive bids until February 15th for a new four-story building with all modern fixtures and appliances, brick construction.

Houston, Tex.—D. R. Beatty will erect a six-story brick office-building, with Turkish baths in basement.

Rocky Mount, N. C.—J. W. Hines is considering erecting a five-story fireproof office-building.

Atlanta, Ga.—Plans have been drawn by Architect B. B. Davis, Louisville, Ky., for a 12-story hotel, with running water in all but 30 of 306 rooms; private baths. Two stories will be of tile, remainder of brick; cost, $750,000.

Louisville, Ky.—The City Hospital Commission is receiving bids on brick construction, heating, plumbing and lighting.

PACIFIC COAST COMMENTS.

San Francisco.

An event of vital importance to all the business interests of San Francisco took place this week when Mayor Rolph was inaugurated. As a direct result of the change of city administration, an activity sprang up in the Hetch Hetchy water-supply project which has been selling slowly. Members of the plumbing and heating trades, as well as all other construction trades, express great satisfaction at the way the new mayor and his board of supervisiors have started upon the work of re-establishing the city government upon a business basis. In fact Mr. Rolph has been the mayor in a sense for the past two months. He has held many meetings with the supervisiors' board-elect and discussed plans to be put into action immediately upon his inauguration. The first concern of the mayor is for the new city hall, and he promises that no delay will be tolerated in connection with this public work. He also promises to begin measures for extending the water and sewerage system, the improvement of the street-car service, the paving and cleaning of the streets, and the projection of tunnels where most needed. With the assurance that he will back up the people in their demands for public works of this nature, it will not be long before considerable new construction work of all kinds will be in progress.

During the next few years, it is claimed by those conversant with the facts, at least $100,000,000 will be invested in the immediate vicinity of San Francisco for public and private enterprises. The cost of building the World's Fair will be fully $45,000,000; proposed harbor improvements will mean an expenditure of about $9,000,000; $4,000,000 will be spent in erecting the new city hall and civic center; there is about $5,000,000 available for sewers, water-supply, public buildings, paving, etc.; $500,000 for the new U. S. Sub-Treasury to be built here; and the bond issue for the Lake Eleanor-Tuolumne water-supply will bring in approximately $44,000,000. How it will be possible for San Francisco not to be prosperous with all this money put into circulation is beyond understanding. Accordingly the spirit of optimism in the air out here does not consist merely of superheated emanations of the imagination.

The awards for the plumbing, heating, ventilating and other work on the Girls' High School will be made soon, the bids having been opened this week.

After much delay on account of unforseen difficulties in the matter of building details, the Mark-Lally Co., the well known plumbing supply house of this city, has just closed contracts for a new building to be erected at the corner of Second and Tehama streets. The structure will be three stories and basement, covering an area 75 x 275, of reinforced concrete. Excavation for the foundation will be commenced at once and it is expected that the new building will be ready for occupancy within four months from date.

The contracts for the plumbing work of St. Luke's Hospital have been warded to J. E. O'Mara; amount, about $29,000. The John G. Sutton Co. was awarded the heating, power, ventilating and electric-wiring contracts for $41,000.

The work of remodeling the building near the corner of Second and Folsom streets, which is to be occupied by the P. F. Howard plumbing supply firm of Oakland, is progressing steadily and it is announced that the place will be opened for business on February 11th. The Howard Co. will also maintain its Oakland office.

Local plumbing supply houses are not a little concerned over the rumored advances in the price of all cast-iron piping. With the price of brass increased five per cent, the situation begins to look serious. Pipe manufacturers have withdrawn all prices and the market for pipe is very unsettled.

The John G. Sutton Co. has added a tiling department to its regular plumbing, heating and ventilating business.

Elsewhere on the Coast.

Planada, Cal.—Franklin B. Mulrein and Curtis W. Reeve, of Merced, Cal., have formed a partnership and will engage in the plumbing and heating business.

Gilroy, Cal.—The plumbing and heating work for the new High School is being figured.

NEW ENGLAND NOTES.

Massachusetts.

Uxbridge.—The Uxbridge Hardware Co. has the contract for the plumbing in the new office-building of the Uxbridge Worsted Co. on Mendon street. Several lavatories, closets and other fixtures are included.

Lowell.—Inspector of Plumbing Stephen Garrity, in his annual report just made public, reports having issued 798 plumbing permits during the year 1911. Of these 211 were for new buildings and 587 for old structures. Mr. Garrity made 2,382 visits during the year.

Holyoke.—Announcement has been made of the intention to install a new heating plant in St. Jerome's church. The work will be done just as soon as weather conditions will permit. The installation of a heating-plant is but a small part of the big improvement which is planned for the church.

Connecticut.

Hartford.—The extra plumbing inspector, authorized by a recent vote of the city government, is to be named at a special meeting the latter part of this month. There are several applicants for the position.

Danbury.—The school committee has accepted the proposal of Duane & Culhane for the replumbing of the Locust avenue school. The contract price is $1,340.

New Hampshire.

Manchester.—Christian Wolf, who was recently named as a member of the city charter revision commission, has tendered his resignation as one of the board of examiners of plumbers. The mayor and aldermen will shortly name his successor.

Portsmouth.—J. F. Dowd, of York, Me., has the contract for the plumbing at the Hotel Champerdowne. The contract is a very extensive one.

Rhode Island.

Providence.—The year 1911 was a record-breaker in the matter of the number of plumbing plans for new buildings filed, according to the report of Inspector of Plumbing Reuben S. Bemis. There were 551 such plans, which has not been exceeded in 14 years. The estimated cost of all the work, $467,045, was not, however, a record. During the year, Mr. Bemis reports, there were 5,994 plumbing inspections, 1,620 drain inspections and 488 miscellaneous inspections, a total of 8,102. The total number of plumbing plans filed was 2,033 and drainage plans 863, making a total of 2,896. Of the plumbing jobs inspected, 12 per cent were found defective.

Vermont.

Benson.—W. A. Johnson has opened a plumbing establishment in the Walker building.

Brandon.—Severy & Robinson have been awarded the contract to install a complete fire-protection system, a water-supply system, a hot-water system, and 25 complete bath-rooms, besides special repairs at the Lake Dunmore Hotel and cottages located on Lake Dunmore near Brandon. This important property has recently been purchased by Carl W. Kimpton, of Philadelphia. The firm of Severy & Robinson is composed of L. A. Severy and C. H. Robinson. These gentlemen are to be congratulated on securing this important contract. They report excellent business prospects in all the lines that they will handle during 1912.

HERE AND THERE IN THE PLUMBING TRADE.

Waterloo, Ia.—Wm. A. Conwell, recently employed by Bruner & Newton, has opened a plumbing shop at 309 Rath St. Mr. Conwell learned his trade in Philadelphia under his father, who is one of the oldest plumbers in that city. His three brothers are also plumbers, making five in the family engaged in "the best business on earth," as some of its followers term it.

Beaver Dam, Wis.—Leo. M. Newman, who for several years has been in business with J. J. Neuman, has recently opened an establishment for himself at 313 S. Spring St.

St. Peter, Minn.—On January 1st A. J. Potts & Co. added a new member to the firm, Richard Maltby. Mr. Maltby has been with the firm, of which he is now a partner, for six years. Potts & Co. are well known in the plumbing and heating trade throughout the state, and intend to increase their business, specializing on state work.

Beach, N. Dak.—Petersen & Field, successors to Petersen Bros., have moved into the old Bon Ton restaurant building, opposite the public school, and are making additions to their stock so that they will be still better prepared to take care of their increasing trade.

Oskaloosa, Ia.—Louis A. Sulter has opened a plumbing establishment on North First street.

Portsmouth, O.—Earl Lawson, the retiring superintendent of the city waterworks, has decided to open a workshop on the second floor of his father's garage, on East Third street, and will engage in the contracting plumbing business.

Beach, N. D.—H. M. Field has purchased an interest in Peterson's plumbing and heating business, and the firm will in the future be known as Peterson & Field.

Brooklyn, N. Y.—The James Horley Plumbing Co. has been incorporated with a capital of $10,000. The incorporators are James Horley, G. L. Horley and Edward Horley, all of this city.

Denver, Colo.—Geo. M. Gilbert, who has been out of business the last nine months, has opened an up-to-date plumbing establishment at 2826 E. Colfax Ave. He would like to receive catalogs from jobbers and manufacturers of plumbing goods.

Shelbyville, Ill.—Max Fraker and Arthur Lundberg have formed a partnership under the name of the Fraker-Lundberg Co. and have opened an up-to-date plumbing establishment at the southeast corner of the Public Square.

Detroit, Mich.—Jacob Zerga, 78 Larned st., W., has incorporated his plumbing and heating business under the name of the J. Zerga Plumbing & Heating Co. The capital stock is placed at $10,000.

Crawfordsville, Ind.—Stephen Miller has moved his plumbing establishment from 120 N. Washington St. to 116 N. Green St. He has just secured the contract for the plumbing and heating of the new Ben Hur building. This contract amounts to $20,000.

Ashland, Neb.—McCartney Bros. have secured the contract for the installation of an up-to-date heating system in the $7,000 new residence now being erected for Charles Kuppe near Murdock.

Ardmore, Okla.—The Hoffman Plumbing & Sheet Metal Co. has been incorporated with a capital of $10,000. The incorporators are John W. Hoffman, Thomas E. Wood and Wilson Newman, all of Oklahoma City.

New Boston, O.—Huff & Burcham is the style of the first plumbing firm which has just opened an up-to-date establishment here.

Manchester, Ia.—H. F. Whitney has sold his plumbing business to R. A. Jacobs and C. E. Chapman, who will continue the business at the old location.

Macon, Ga.—The board of health recently increased the amount of the bond required from plumbers from $1,000 to $3,000, and this must be furnished before a license will be issued. It was stated that the great increase was due to the number of incompetent plumbers, and that the reputable men desired to have them weeded out. This bond is intended to safeguard the city against all damages that may result from defective work or failure to observe the ordinances of the city relative to sanitary installations, street and alley excavations and placing lights on excavations and obstructions at night. An effort will be made at the next session of the legislature to secure a board of examiners for plumbers in Macon.

Rockford, Ill.—C. W. Barber reports good business during the past season and equally fine prospects for 1912. Mr. Barber graduated from the Coyne trade-school, Chicago, and has established a nice trade since opening up his shop.

Klamath Falls, Ore.—Alva. P. Hoine has just opened a plumbing and heating establishment here. He would like to receive catalogs of plumbing and heating supplies.

IOWA MASTER PLUMBERS IN SUCCESSFUL CONVENTION.

Just as we are about to go to press with this issue the following advance report of the 24th annual convention of the Iowa State Association of Master Plumbers is received from our representatives attending the meeting:

The Iowa Master Plumbers' Association opened its 24th annual convention at 11:05 Tuesday morning, January 16th, in the Coliseum at Des Moines, Ia. After an address of welcome by Mayor Hanna the following committees were appointed:

Auditing committee: Frank Vollers, Keokuk; R. J. Burkett, Des Moines; M. Hurley, Iowa City.

Resolution committee: Robert Knauer, Des Moines; George MacDonald, Cedar Rapids; John F. Garvey, Mason City.

Credential committee: John Kane, Keokuk; A. L. Grotowohl, Burlington; F. W. Baird, Des Moines.

Grievance committee: John Gearen, Sioux City; William Nesler, Dubuque; William Bogenkamp, Muscatine.

Sergeants-at-arms: T. E. Baller and J. J. Smith, both of Des Moines.

Tuesday afternoon the meeting was called to order at 2:30, President C. G. Bosch, of Burlington, presiding with Secretary McCarter. The roll was called by L. I. Brown, organizing secretary. The attendance was fairly good, all Des Moines members being present. C. V. Kellogg, of Kellogg-Mackay Co., Chicago, made a very interesting talk, favoring organization and association with the idea of getting away from the "get-rich-quick" notion. He suggested that plumbers take for their business slogan the motto: "Be honest with yourself."

J. S. Knox, of Des Moines, made a very interesting talk on "Salesmanship," suggesting to plumbers the absolute importance of their practising real salesmanship in their business.

The meeting adjourned at 4:30. At the Elks Club rooms the Des Moines Association gave a dance and reception in the evening which was attended by all the guests and delegates of the convention.

The convention held interesting sessions Wednesday and Thursday, a complete report of which will be published in next week's issue of "Domestic Engineering."

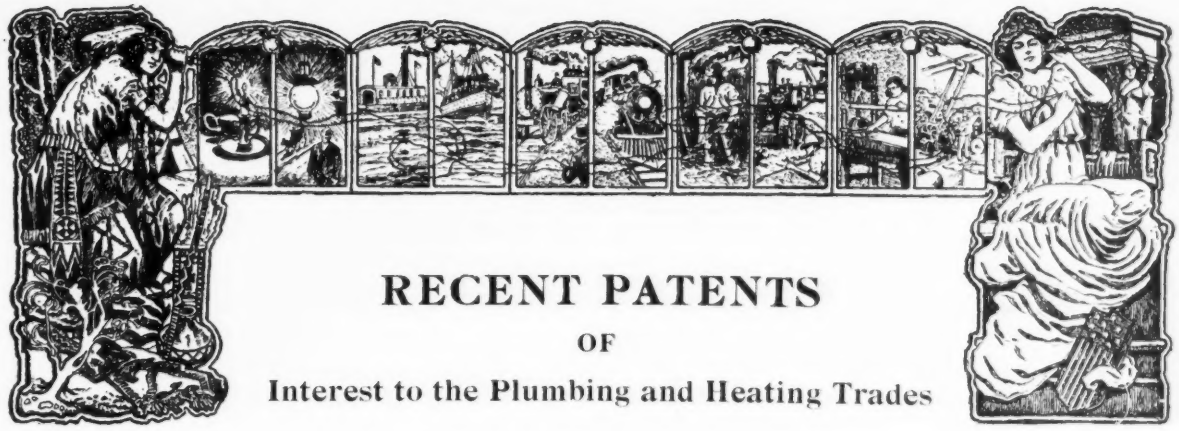
The election of officers took place Thursday afternoon and resulted in the election of Robert Knauer, Des Moines, as president, while all the other officers were re-elected as follows: Vice-president, Frank Vollers, Keokuk; secretary, W. B. McCarten, Dubuque; treasurer, J. N. Gearen, Sioux City.

It was decided to hold the 1913 convention in Sioux City.

H. F. Weaver, W. H. Irons and Harry Snow, of the Peerless Selling Co., Evansville, Ind., had an interesting exhibit at the Savery and gave all visitors a cordial greeting. They were brewing punch as usual and assisted greatly in making the social end of the convention a success.

Correct Usage.

A teacher asked her scholars to give a sentence using the word disarrange. An Italian boy submitted this: "My mudder she gotta da coal range. My fadder get up in da morning, make da fire he say, 'Damma dis a range!'"



RECENT PATENTS

OF

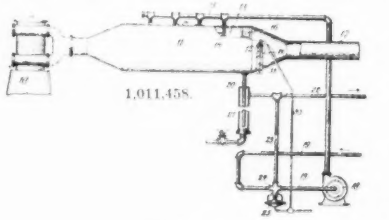
Interest to the Plumbing and Heating Trades

Heating Department.

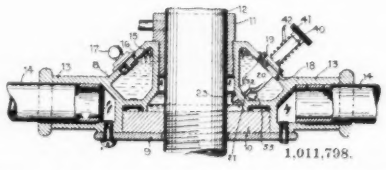
1,011,458. Humidifying Apparatus and Means for Controlling the Same. Joel Irvine Lyle, Plainfield, N. J., and Edward T. Murphy, Philadelphia, Pa. Means for varying the temperature of the air in air-humidifying and cooling apparatus, as the pressure thereof varies, comprising a differential fluid pressure operated means, means for subjecting one side thereof to the pressure of the air, means for subjecting the other side thereof to the pressure of a fluid whose pressure increases upon increase of its temperature, in substantially direct proportion to the increase of air-pressure required under corresponding temperature increases of the air, to maintain a substantially uniform moisture content in the air at its dew point, and means controlled by the operation of the said differential fluid-pressure means to vary the temperature of the air.

1,011,798. Pipe-Die. Henry J. Hunt, Davenport, Ia. A lubricator for cutting dies comprising a stock provided with a lubricant reservoir, the outer wall of said reservoir being provided with a filling opening, a plug for said opening, the outer wall and the inner wall being provided with alined openings, a pump cylinder having its head and discharge end engaging said alined openings, said cylinder being provided with an intake, partitions in said reservoir arranged to provide a lubricant pocket at said intake, and a manually operable piston in said cylinder.

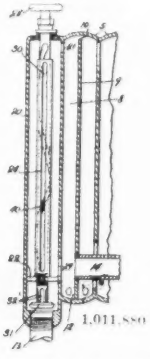
1,011,880. Radiator. Albert Baerenklau, John L. Flanagan, and James Lloyd Winters, New York, N. Y. In a steam-radiator the combination of a vertical partition, a heating chamber formed to the one side thereof and communicating with the interior of the said radiator at the top, a valve chamber formed adjacent the said heating chamber and communicating therewith, a valve in said valve chamber comprising a slotted sleeve, a valve body in said sleeve and provided with a spiral slot adapted to co-operate with the aforesaid slot to cause the condensation water to accumulate at will and means for supplying steam to the bottom of the said valve chamber.



1,011,458.

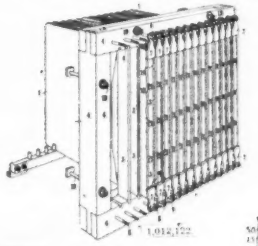


1,011,798.

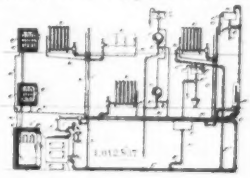


1,011,880

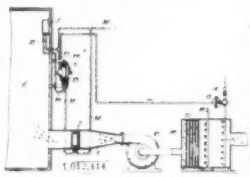
1,012,122. Air-Filter. Alfred Budil, Brackwede, Germany. An air-filtering device comprising a frame having an opening therein, a filter fitting into said opening, said filter consisting of a pocket-shaped receptacle of cloth having a compressible bead about its mouth and an open-work support about which said pocket fits, and means connected to said frame and engaging said support for causing said bead to seal the joint between the bead and frame.



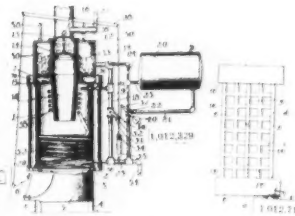
1,012,122



1,012,517



1,012,414



1,012,329

1,012,716

1,012,329. Heating System. William P. Cosper, Chicago, Ill. In a device of the class described a heating system embracing a source of heat, a heating-coil, a heating, mixing and expansion-tank communicating with the coil at each end thereof, an auxiliary reservoir connected with the heating-coil and said tank, a by-pass connected across the coil, valves serving to cut out the auxiliary reservoir and to open and close the by-pass, and means for operating said valves.

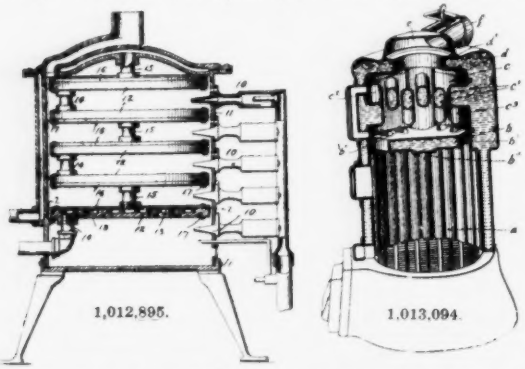
1,012,414. Humidity-Controlling Apparatus. Edward T. Murphy, Philadelphia, Pa. Humidity-controlling apparatus comprising a differentially-operated fluid-pressure device including a movable wall, differentially-operated thermostatic mechanism for controlling the fluid-pressure upon the opposite sides of the said movable wall, and a controller governed in its operation by movements of the said movable wall.

1,012,716. Radiator. Charles Samuel Sage, Rome, N. Y. A radiator comprising, a vertical tube having an inlet at its upper end and closed at its lower end, a vertical tube having an outlet at its lower end and closed at its upper end, and a series of horizontal tubes connecting the two vertical tubes, the sides of the tube-structure thus formed being adapted for exposure to a current of cooling air flowing horizontally in a direction from the second mentioned vertical tube to the first mentioned vertical tube, combined substantially as set forth.

1,012,837. Vacuum System for Use in Connection with Heating, Refrigerating, Evaporating and Other Apparatus. Newland E. Frost, Chicago, Ill. The combination with a device having a chamber to be evacuated, of an automatic vacuum-system for producing and maintaining a partial vacuum in said chamber, the said vacuum-system having an elevated tank or receptacle, an outlet-pipe extending downward from the tank or receptacle to provide a hy-

drostatic column, the upper end of said pipe being open to atmospheric pressure, a vacuum-producer having a vacuum-chamber communicating with the outlet-pipe at a level below the tank or receptacle and a pipe communicating with said vacuum-chamber and the chamber to be evacuated.

1,012,895. Water-Heater and Steam-Generator. James Muirhead, Pawtucket, R. I. In an apparatus of the class described, a water-heating unit comprising abutting plates having inlet and outlet openings, and between which is a

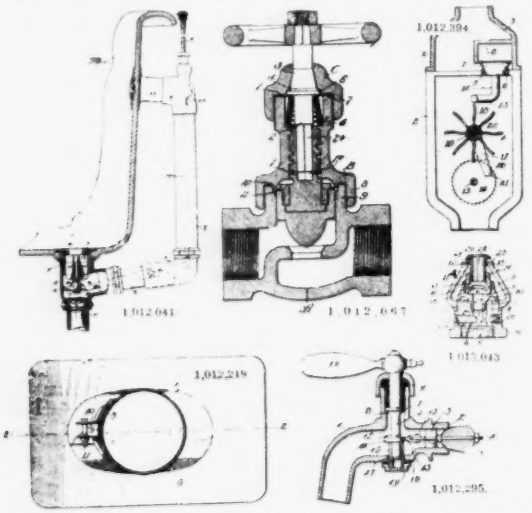


water-passage of the form of a continuous spiral extending between said inlet and said outlet and consisting of a shallow channel whose walls are formed by the surfaces of the plates.

1,013,094. Water-Heater. Wilbert G. Wise, Akron, O., assignor to the Wise Furnace Co., Akron, O. A water-heater section comprising a horizontal chambered or hollow annular member, and a plurality of connecting transverse tubes interiorly thereof, which are sharply inclined and extend between connections positioned respectively at the upper and lower levels of said member upon either side of a vertical bi-secting plane, substantially as set forth.

PLUMBING DEPARTMENT.

1,012,041. Lavatory. Henry M. Weaver, Mansfield, O. The combination with a bath-tub having a waste-outlet and an overflow-outlet, of an elbow communicating with the waste-outlet, a vertical pipe, an elbow communicating with the upper end of the vertical pipe and with the overflow-outlet, a pipe-connection between the lower end of



the vertical pipe and with the first-mentioned elbow, a plug for the waste-outlet, a stem for said plug comprising two removable-connected members, the lower member having a horizontal opening, a lever pivotally supported in the pipe-connection between the vertical pipe and the first-mentioned elbow, and having one arm passing freely through the opening in the lower member of the plug stem, an operating-rod passing through the vertical pipe and connected with one arm of said lever, and means for retaining said rod and attached parts in any position to which the same may be moved.

1,012,067. High-Pressure Packless Valve. Frank C. Emrick, St. Louis, Mo., assignor to Leo J. Kadeski, St. Louis, Mo. A valve comprising a casing provided with an externally screw-threaded flange, a bonnet provided with an integral ring-shaped flange that surrounds the flange on the casing, a cap screwed onto the upper end of said bonnet, an annular tapered rib on said bonnet that fits snugly in a tapered recess in said casing, a valve stem provided with a tapered portion that fits in a seat in said cap, yielding means which exerts pressure on said stem and thus holds the tapered portion thereof seated, and a beveled surface on said stem at the base of said tapered portion for preventing said tapered portion from jamming or sticking tightly in its seat.

1,012,394. Flush-Valve. Maurice Sterling Matthias, Galion, O. In a device of the character described, the combination, with an inclosure having inlet and outlet openings arranged respectively at its upper and lower ends, of a water-wheel arranged centrally of said inclosure, said inlet opening being located near one side of the inclosure whereby it is in vertical alignment with only one side of said water wheel, a shaft arranged below said water wheel, a slotted drum and a ratchet wheel mounted on said shaft at the opposite sides of said water-wheel, a valve for closing said inlet opening, a valve-stem connected to said valve, and having an offset to pass around said water-wheel, the lower end of said valve-stem adapted to engage in the slot in said drum when the valve is closed, means to raise said valve-stem so as to withdraw its lower end from the slot in the drum when the valve is opened, and an oscillating dog carried by the shaft of the water-wheel and adapted to engage said ratchet-wheel for the purpose specified.

1,013,043. Sanitary Drinking-Fountain. Philip Mueller and Anton C. Schuermann, Decatur, Ill., assignors to H. Mueller Mfg. Co., Decatur, Ill. A drinking-fountain having a nozzle provided with two independent water passageways therein, an adjustable nipple having a flaring head and a central opening, means connecting said nipple with one of said passageways through which water from the said passageway may pass only to the nipple to form the drinking stream, and an encircling shell surrounding the lower end of said nipple and the connecting means having a opening in its upper end slightly larger than said nipple and encircling the same, forming thereby an annular outlet for the water passing through the second independent passageway and through said shell around the nipple connecting means to form an encircling sheet below the head of the nipple.

1,012,219. Roof-Joint. Charles Augustus Overton, Coeur d'Alene, Idaho. A roof-joint comprising a frusto-conical sleeve having a continuous outstanding securing flange at its base, and split longitudinally from the top to but not through said base to permit contraction of its upper portion, the base being left intact, and means at the top of the sleeve for tightening the same around the pipe.

1,012,295. Faucet. James William Terrell, Chico, Cal. A faucet of the character described comprising a body portion having in its inner end a valve seat, a valve adapted to be engaged with said seat, a valve stem connected with said valve, a valve operating shaft revolubly mounted in the body of the faucet, means operatively to connect said shaft with said valve stem, means to center and support the upper end of the shaft and a removable bearing socket arranged in the lower portion of the body of the faucet and adapted to receive and revolubly support the lower end of the shaft.

The Greater Tragedy.

The man whose daughter had just been united to the husband of her choice looked a little sad.

"I tell you, squire," he said to one of the wedding guests, a man of his own age, and himself the father of a number of unmarried girls, "I tell you, it is a solemn thing for us when our daughters marry and go away."

The squire assented, not altogether heartily.

"I suppose it is," he conceded; "but I tell you, it is more solemn when they don't."—Youth's Companion.